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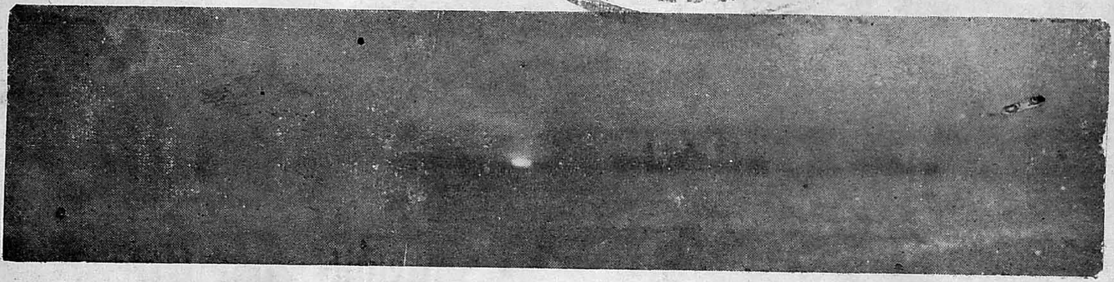

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history of medicine number

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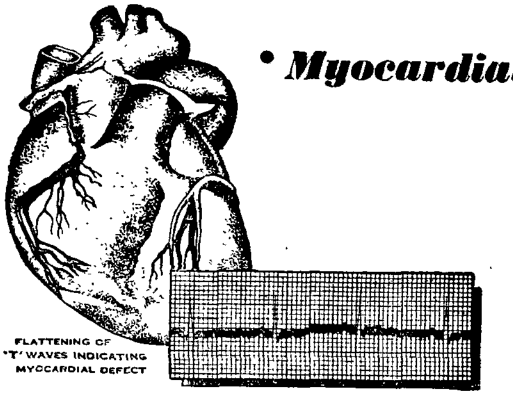

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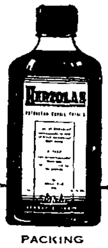

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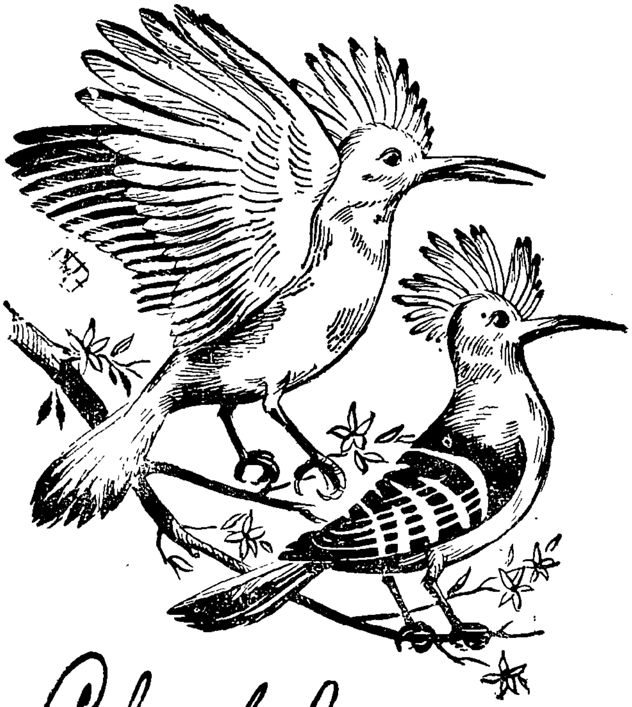

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the editorial

THE HISTORY OF MEDICINE

The history of Medicine is too vast a subject to be put between the covers of a magazine; and also it is quite impossible to tell it as it should be told. It is as though one were watching and at the same time trying to describe the weaving of a great carpet, on which many people are at work-including yourself.

"History," said Henry Ford, "is bunk !! He was right and wrong at the same time. History is the story of men and movements—of men who have, consciously or unconsciously, initiated great movements by which the thought and action of the men of the time were moulded and controlled. To understand the old pioneers of medicine, one must see as they saw, feel as they felt, believe as they believed—and this is hard, indeed impossible ! We may get near, by asking the Spirit of the Age in which they lived to enter in and dwell with us, but it does not always come. Each generation has its own problems to face, looks at truth from a special focus and does not see the same outlines as any other. For example, men of the present generation grew up under influences very different from those which surrounded the men of the last century, when Virchow and his great contemporaries, laid the sure and deep foundations of modern pathology. To men of those times, Virchow's "CELLULAR PATHOLOGY" was a Bible of medical science, while to most of us, it is almost a closed book and Virchow—a spent force ! As far as that, Ford was right.

But yet the labour of Virchow, Hunter, or any of these long dead scientists, is not a labour lost. Though a new generation has new

19 MAR 1957 MADRAS

problems, we cannot forget that the makings of the medical science today are largely due to these early pioneers. It is one of the values of any writing on history of medicine, to keep alive the good influences of these men even after their positive teachings are antiquated yet ironically, if one peruses the lives of these men, one finds that they in their time imagined that they had exhausted the subject for their generation. Virchow was not happy when he saw the younger scientists pouring the new wine of bacteriology into the old bottle of cellur Pathology; Lister could never understand how aseptic surgery arose out of his work; Ehlrich if he had lived would not have recognized his epoch-making views on immunity after the next generation had finished with them,

Thus "Progress is a series of negations," the denial today of what was accepted yesterday, the contradiction by each geneneration of some part atleast of the philosophy of the last. But the germ plasm remains—a nucleus of truth, often dormant for centuries and awaiting the fulness of time, because all scientific truths are conditioned by the state of knowledge at the time of its revelation. Thus in the history of medical science many discoveries that were far ahead of their times went unheeded or were actively opposed by the mass of men.

The value of any study of the history of Medicine is in finding out the evolution of the different principles and techniques of diagnosis and treatment, and the part played by society and superstition in the formation of such principles. The progress in Medicine has closely followed the progress of civilization. In this issue of our Journal, we have traced the evolution of medicine through about twenty five thousand years of history from the first evidence of a medicine-man up to the evolution of atomic medicine. In the beginning, the philosophy of medicine evolved around the belief that diseases were caused by supernatural forces; but medicine today has got rid of such beliefs and diseases are thought to arise out of natural causes. But civilization has not yet changed Man's essential nature; he is still largely controlled by instinctive beliefs and impulses developed in the primivitive man a million years ago and these impulses and instincts with their accompanying emotions are now embodied in the very structure of human nervous system. Rational Medicine has got one of its greatest opponents in such people. People, though they may have literary or religious education have never learned to think logically in matters of health. They do not understand the principles of science and are therefore controlled by sentiment and opinions which are held tenaciously because they are matters of faith. The only way of reforming these ideas is by education and reason.

But unfortunately in many cases the opposition to rational medicine does not spring out of the lack of education or reason. People who are educated and are great leaders in their own walks of life, put up an active opposition either because of mistaken ideas or to gain prominence. The anti-vaccinationist, headed by such a prominent person like

the late George Bernard Shaw, oppose one of the most essential and proved measures of preventive medicine; and it is due to them that small-pox still prevails in certain countries. The anti-vivisectionists and the religious fanatics oppose medical investigations on animals, with arguments against cruelty which exists only in their imaginations. In recent years the anti-B.C.G. Vaccine group of people lead by Shri C. Rajagopalachari, have started their campaign of villification against one of the best preventives against Tuberculosis. They are opposing the vaccination of B.C.G. with flimsy arguments and uncorrelated, and confusing case histories :—The result is that in many places the B.C.G. vaccination campaign failed because of the loose talk and anti-propaganda.

We do not question the right of the laymen to place arguments against a particular aspect of medical science, if the arguments are sound and scientific. Some of the greatest discoveries in medicine—accidental or intentional, were made by laymen. But we question the presentation of facts—when they are uncorrelated. As Emerson says—facts are not better than fiction when they are impure. A man might get sick on taking a Vitamin pill; a man might die after taking a glass of milk. But to hint that the sickness or the death was due to a vaccine, or a pill or a glass of milk is to carry the argument too far.

Every medicine has got its side reactions, varying with different people. A man can go on taking penicillin without any ill-effects, while another may develop severe dermatits after the first injection. An injection of liver extract or tetanus vaccine might very rarely induce shock and collapse. But we still follow those medicines because of their benificial effects which far outweigh the unpleasant side—reactions which may occur in one person out of Ten thousand or a million.

We do not claim that B.C.G. is a wonderdrug or that it has not got side reactions. It does not produce *complete* immunity against Tuberculosis ; it may produce an ulcer which may not heal for a few weeks ; it may induce a swelling of the lymph glands in the axilla, more than it should. In one or two instances, more severe reactions might have resulted because of the carelessness of the vaccinator. But these side-reactions are nothing to make the people afraid or for politicians to argue about. It is making a mountain out of nothing.

But at the same time, the worst danger to the progress of medicine or to the rapid eradication of the diseases comes from the members of medical profession. Even today, like the primitive medicine man, doctors try to get hold of a wonder drug to cure all the diseases they come across. The diseases against which antibiotics are made use of are innumerable and some of them are incurable by antibiotics. A few years ago Penicillin used to be administered for diseases ranging from a common cough to dysentry. This practice has been entirely put an end to by the timely warnings of the scientists. But today while the old habit

has been given up, a number of antibiotics and other wonder drugs like AC.T.H. are given to a patient at the same time, with the hope of getting a rapid cure. This seems to be a very good way of evading the problem of diagnosing the illness, before effecting the cure. If we go on prescribing again in the good old Galenical tradition, without paying attention to scientific data, we might find in a few years, the elusive microbes defying subjugation, by every drug we have in our repertoire.

In this issue of the Journal, we have presented a detailed history of European Medicine. That statement itself points out the deficiency in our presentation in that, we have not been able to give a satisfactory account of the history of Medicine in India. The difficutly with us, as with anybody editing a Journal of the history of Indian Medicine is the lack of facts, and also of good references for consultation. Indian Medicine was very well advanced in the ancient times, and the methods of Indian Surgeons were far superior to that of their contemporaries in other countries. But we of the present generation have no access to the history of those of times, except through two books of Shusruta and Charaka. There is a great need in India for the starting of an institute to do research in the history of Indian Medicine. It will have to investigate the indigenous medical systems not only for their ideological content, but also to evaluate its practical achievements in the old times. Its first and foremost task should be to bring together and make available all the sources of medical history; then to make translations of these documents into the English language, so that they are available to medical historians all over the world. But, the task is not an easy one, as "books other than medical texts, sculptures, paintings will also need to be examined". And also, "as India was never isolated from the rest of the world, history of Indian Medicine has to be studied in relation to the developments or their neighbouring countries, as a part of the universal history of Medicine."

THE JOURNAL

This issue of Journal has been the crystallised product of tears of disappointment and the sweat of toil.

We started the year without a single penny to our account, our only assets being our ambition and determination. We are grateful to the students and the staff members who gave donations to get the magazine started, though at times we met bitter and fanatical opposition from people who seemed quite disinclined to allow the publication of this Magazine. Often we met them behind a sheep's clothing, of excuses about past happenings and the desire to follow some silly principles." But inspite of all this, we are rightly proud that we were able to bring out an issue of the Journal and probably we will be able to publish another issue in this academic year.

At the same time we offer our apologies to the readers, for the delay in bringing out this issue. It has irritated the readers and, I assure you, embarrassed us. Our excuse is the same as that of the last year's

Editor or that of the year before last's. There seems to be an impression around the college that the Editor must come on bended knees for articles and that was what every Editor was doing before me. This time the students flooded us with articles while the bosses as usual fidgeted, consented, refused, demanded stenographers, reference books etc., and then some of them left us to our fate at the end. We had to ask some of the students to rush up with the articles which some of the bosses had promised, giving the students only a few day's time to complete it. After that, proof reading and printing proved quite a task.

We do not moralise on anybody's faults; but let this be clearly understood—the Journal of the Stanley Medical College is not the Editor's or his associate's private diary. It is the Journal of all the students and staff members. To emphasise, it is the Journal of the Dean, of the Vice Principal, of the staff Editor and of all the bosses and students. It is for all the students to take an interest in the Journal One can always give an excuse of lack of time; the student has his exams; the boss has his wards and patients; only the Editor and his associate seems to have all the time in the world in their hands! Let this state of affairs be put to an end. Let indifference never be a reason for refusing or even delaying an article. We have to make the Journal a Co-operative effort of all those who are connected with this institution.

ACKNOWLEDGEMENTS :

I must thank all the people who helped us to bring out this issue of the Journal. In particular my thanks are due to Doctor Frans Hammerjikx who contributed the article on "History of Leprosy".

I thank Messers Parke Davis Company and Voltas Ltd., for giving us permission to reproduce some of the illustrations.

My thanks are also due to Messers K. V. S. Mani, B. Abdulla and R. Krishnaswamy for typing some of the manuscripts. To Messers Harischandra and R. Krishnamurthy for the illustrations.

Last but not least we sincerely thank Ms. Bharat Studio for making the blocks of the illustrations and Ms. K. M. S. Press for printing the Journal.

December '56
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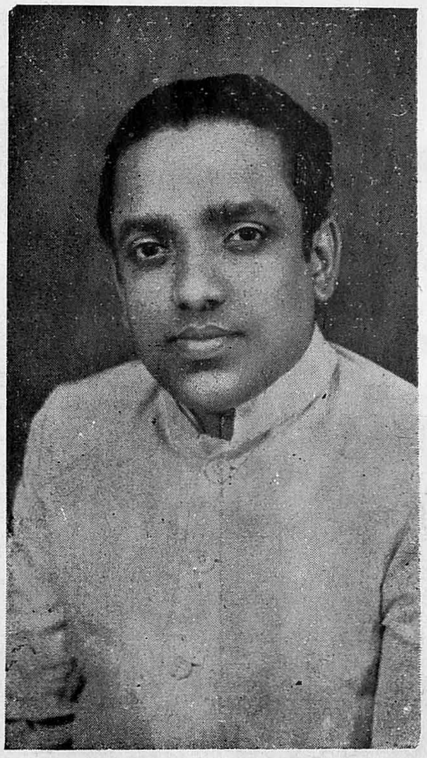

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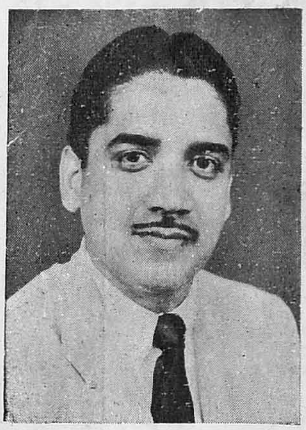

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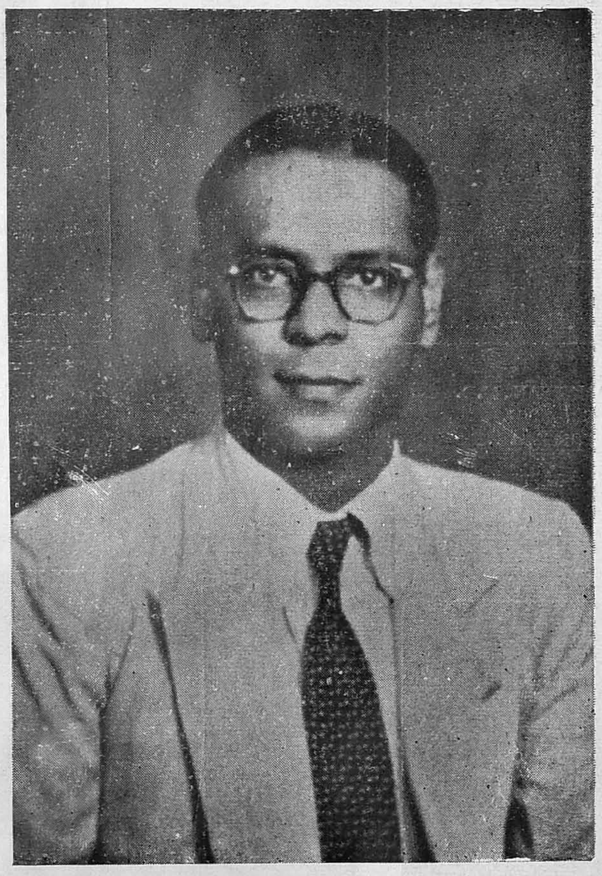

DR. T. JANAKIRAM

" He made no one unhappy till he passed away "

IN MEMORIAM

Dr. T. Janakiram was born on 23-7-1919. His father the late Dr. Sadagopan was a wellknown doctor and rendered great service as an Hon. Physician of the General Hospital for a number of years. After graduation from Madras Medical College Dr. Janakiram was for. sometime a demonstrator in the Anatomy department of the same college. He then entered the Medical Service as a Civil Asst. Surgeon. In 1954 he was selected for the post graduate degree course in Medicine and was posted to the Govt. Stanley Hospital where he worked for two years. During the last few months of his service he was also attached to the Stanley Medical College as a tutor in Medicine. During his stay in Stanley he was very popular and had endearing himself both to the students and staff of the College and Hospital.

He obtained study leave for a period of 2 years from 1-9-'56 to enable him to proceed to England for his M.R.C.P.

On the 9th of September Dr. Janakiram accompanied by his young wife and two years old son boarded the ship from Bombay. On the 20th of September when the ship had emerged from the Suez into the Mediterranian he had an heart attack and inspite of the immediate medical attention he passed away.

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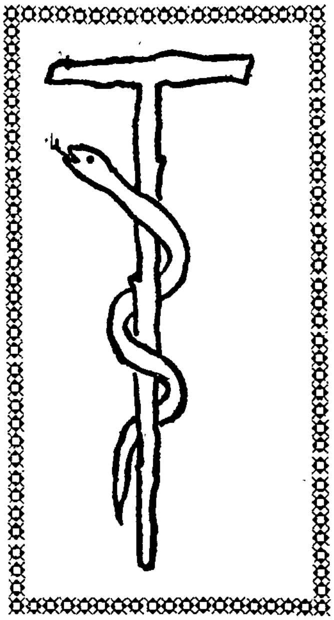
Aesculapius and the Story of the Symbol

By
Miss CECELIA CLEETUS,
IV Year

Long, long ago, before the birth of Christ, a celebrated story was told in Greece of a man named Aesculapius and the remarkable powers of healing he possessed. Aesculapius was the son of Phoebus Apollo and Cornonis. In his youth so striking was his appearance that all who saw him knew that this was no ordinary mortal. Under the tutelage of the Centaur Chiron, he mastered the arts of medicine and Botany and studied the efficacy of various herbs which man had not then learnt to use.

One day while in the house of a friend he killed a snake. But what was his amazement to see another snake glide into the room with a herb in its mouth and dramatically restore its dead comrade to life! Quickly Aesculapius seized the herb and learned to use it in healing the sick and bringing the dead back to life. Perhaps for this reason and also because the shedding and renewing of skins suggests powers of healing, serpents have ever since been the symbol of medicine.



Aesculapius served as the ship's doctor on the famous voyage of Jason and his Argonauts in search of the Golden Fleece. On his return he devoted himself entirely to the healing arts. When Hippolytus was torn asunder by wild Horses, Aesculapius restored him to life by "gluing" him together. He would have done the same for the great hunter Orion killed by the vanity of his own loevr Diana, but Pluto king of the underworld intervened. As ruler of the dead it was but natural that Pluto should have been alarmed by the achievements of this mere mortal which threatened to throw him out of the banners. He appealed to his brother Jupiter, King of Gods, who agreed that death must be the inevitable end of all mortals, a devine law not to be trifled with by even the most skilled of physicians. Lifting up a mighty thunderbolt he struck dead Aesculapius with a single blow. In tribute to the great man however, the Gods placed him among the stars where all mankind would see and remember his along service on thier behalf. The constellation honouring Aesculapius is called Ophinctus which comes from two Greek words meaning "The man that holds the snake". It depicts a man with outstretched arms, the whole length of a serpent writhing in his grasp.

Aesculapius was later defined as the God of Medicine, usually represented as an old man carrying a staff around which a serpent was entwined. It is said that when a great sickness struck the city of Rome, the people turned to the Greek God who it was said had power over illness and disease. A deputation was sent to the temple of Aesculapius where they begged the God to come to their aid. Aesculapius replied favourably and when they set for home, the God himself accompanied the ship in the guise of a serpent. On arriving at a certain island in the river Tibu the serpent was seen to glide away from the ship and take possesion of the island. A temple was built at the spot and the epidemic came to an end.

Among the daughters of Aesculapius were two named Hygeia and Panacea. The terms they signify today in medical parlence hardly need clarification. Aesculapius himself is of course still the patron saint of doctors.

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History of Anatomy

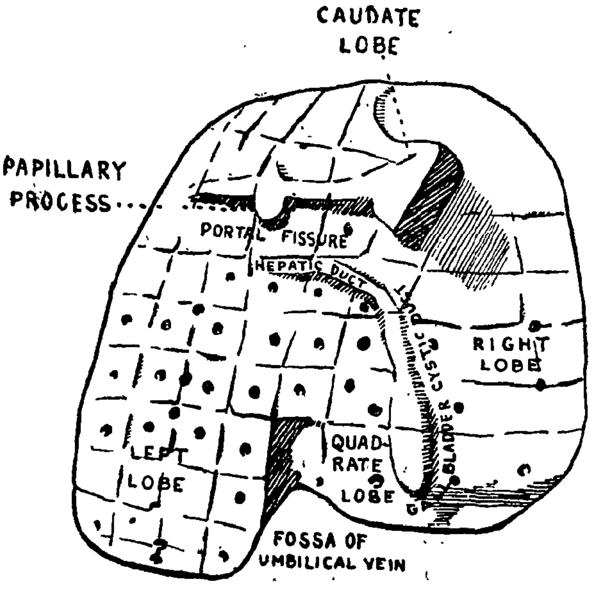
By

DR. SARAH, J. SOURI, M.B.,B.S., D.G.O., Ph.D.,

Associate Professor of Anatomy.

The history of human anatomy began with the primitive cave man who well knew where to find the heart of his victim. He had portrayed it transfixed with arrows on the walls of his shelter.

The true anatomical tradition like that of every other science goes back to the Greeks. From them the methods, applications and even the very nomenclature of anatomical terms are more or less directly derived. The predecessors of the Greek culture have exhibited characteristic works of art of high order disclosing the surface contours of the body of man. It is said that the Greeks had penetrated into Egypt and perused written records of great antiquity pertaining to the accounts of the structure of the human body in the year 4500 B.C. The Egyptian Hypopotamus faced goddess was assigned the sign of the form of the womb. The figures of the hearts and the trachea were frequently represented on Egyptian amulets, The Mesapotomia clay models of the liver of the sheep were used for divination at an early date (Fig. 1). At a later period in his writings referred to subjects relating to medicine and human anatomy, Empedocles of Sicily 5th Century B.C described the heart as the centre of the vascular system and the chief organ of the pneuma which was supplied by blood vessels. His teaching formed the basis of the pneumatic school of medicine which produced important devolopments.



Mesapotamian Clay Model of the Liver.

The hipocratic collections are attributed to many authors ; and of these the treatise on the sacred disease has evoked considerable interest. In this treatise the brain of man is represented as resembling that of all other animals in being cleft into two symmetrical halves by a vertical membrane. The author mentions that he had cut open the skulls of goats to examine the brain. Another piece of work in the hippocratic collection was "Wounds of the head" This treatise described admirably the operation of trephining. Mention must be made of the Greek sculpture of 200 B.C. which revealed that the artists were working on a real anatomical tradition derived from dissections.

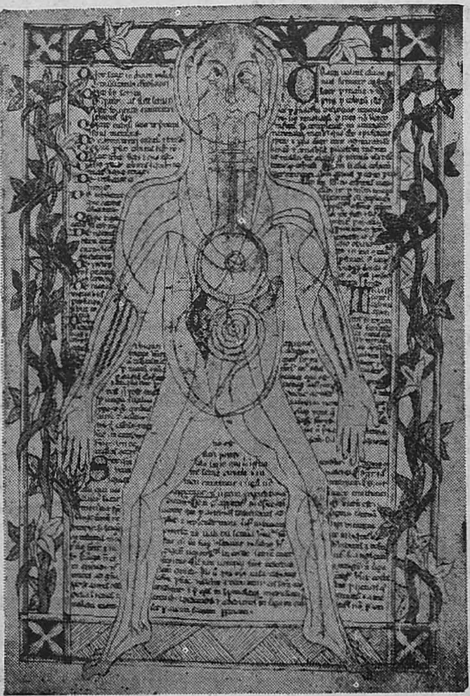
During the early Athenian period, Plato and his contemporaries propounded fanciful ideas of the human body which influenced the middle ages and thwarted the true progress of anatomical investigations. During this age, reference is made to early observations in the devolopment of a human embryo. Dioclese in the 4th B.C. was able to distingish a human embryo of forty days duration.

A treatise on the heart written in 340 B.C. contains a description of the auricles, the auriculoventricular and the semi-lunar valves, the columnaecarnae and the chordae tendinae. An account is given of an experiment for testing the competence of the cardiac valves.

Aristotle who lived about 350 B.C. wrote three books on Anatomy being the "history of animals;" "parts of animals;" and "generation of animals." His anatomical feat was the account he gave of the placental development of the dog fish. His most important embryological researches were made upon the chick. He asserted that the first signs of development were noticeable on the third day, the heart being visible as a palpitating blood spot. A little later he observed that the body had become distinguishable, the head being clearly distinguished and the eyes very large. These observations are admirably approximate considering the lack of optical aids in those early ages. He arranged animal forms into a classificatory scheme. In this classification he differentiated the cartilaginous from the bony fishes. His treatment of molluscs has been considered remarkably brilliant.

With the close of the Athenian scientific school, the centre of the scientific world shifted to Alexandria in Egypt. It was Athens centre that Anatomy first became a recognized discipline. Herophilus and Erasistratus who were Asiatics and who flourished in the first half of the 3rd century B.C. were Alexandrian Anatomical teachers. Herophilus was the first to dissect both human and animal bodies, before the public. He wrote a work on Anatomy, a special treatise of the eyes and a popular handbook for midwives. He was the first to grasp the nature of nerves. He greatly extended the knowledge of the brain distinguishing the cerebrum and cerbellum, the fourth ventricle, and above all the calamus scriptorius which he named. The terms prostate and duodenum are derived from those which he used. He gave the first description of the lacteals. Herophilus made the first distinction between the arteries and veins. Anatomical research at Alexandria began to wane but the city remained long a great teaching centre and minor advances were made. Hegtor who lived about 130 B.C. knew of the ligamentum teres of the hip joint.

The Roman Empire rose in 50 B.C. and continued for the first thousand years after Christ. During this period latin and anatomical literature came into being. Cicero 106-43 B.C. wrote Denatura-deorum in which he gave an elementary popular expostion of anatomy. Lucritius in the Dererum natura set forth a theory of the origin of animals and men which was faintly comparable with Darvin's doctrine of natural selection. The best latin medical work was Deremedica. written by the Cepsus surgical section of this book containes a certain amount of anatomical description which includes a complete



Medieval Anatomical Diagram 14th century

account of the skeleton. Rufus of Ephesus in 50 A.D. produced a great number of works which were known to the Arabic writers but did not directly influence the middle ages in the west. His work on the

naming of the parts of the body was the first, devoted to the important subject of anatomical nomenclature. The names that we use for structures in the eye are here encountered.

The greatest of ancient physicians was Galen who lived from 130-200 A.D. So prominent did Galen become that his teachings and writings influenced all the healing arts. Up to the end of the 16th century Galen never dissected a human cadaver. He dissected dogs, pigs and other animals and by analogy formed ideas about human internal anatomy. He wrote a treatise on the organisation of the human body that became the accepted text for the entire medical world for the next fourteen centuries. All the time dissection of the human body was rigidly prohibited by law. How atrocious was the anatomy of the early middle ages can be surmised in a diagram illustrating the viscera of the human body belonging to the 13th century. (Fig. 2).

In the 14th and 15th centuries doctors became brave enough to advocate abandoning Galonic anatomy and called for actual dissection of human cadavers.

Andreas Vesalius was largely responsible for leading the medical world away from Galen. Vesalius is the father of modern anatomy. The "De-Humani Corporls Fabrica" is an unsurpassed work of scientific art produced by Vesalius. The book was the joint product of a scientist and an artist. Jan Stephen Vancalcar was the artist who drew the anatomical features which Vesalius laid bare. This great book radically revised concepts of the structure of the human body which men were taught for centuries. In the 16th century it was regarded as indecent for a professor to take a knife in his own hand for dissection. At lectures this odious task was performed by barber surgeons. So Vesalius began his own independent study of anatomy. He prowled about Paris church yards and places of execution for subjects. Some times he faught with wild dogs for the corpses, which he dragged home to dissect in the quite of his room. Soon he could recognize every bone with his eyes closed. His skill gave him the privilage of acting as barber at demonstrations. While he was still a student at Louvain, he shocked his teachers by conducting a demostration in which he lectured and dissected at the same time (Fig. 3). At 22 he left for Venice where he helped the Jesuits to care for the dying, the prisoners and lepers. Just before his 23rd birthday,

A page from the "Fabrica" of Vesalius published in 1543. One of most famous pictures in the history of Medicine, showing Vesalius himself performing a dissection.

Vesalius was appointed Professor of Surgery and Anatomy at the Universisy of Padua. Here he set to work to realise his great dream to persue the science of anatomy. One of his ventures was a ceremonial public dissection From all over Europe. hundreds of physicians, philosophers and theologians came to see his demonstrations.

Vesalius studied Anatomy in so orderly and thorough a manner that for the first time in History it could be presented in a way that explained the entire structure of the human body.

In 1538 he published the Tabulae Anatomicae. Only 2 copies of this work are known, one in the Sans Marco Library, Venice and the other in the possession of Sir John Sterling Maxwell whose father had it reproduced in facsimile (30 copies only) in 1874. In the figures and text of the Fabrica we find details of Anatomy as we know it.

They had not in those days the art of making corrosion preparations but they could in some way dissect up to the finest ramifications of the arteries. veins and nerves which were then spread on boards and dried.

Vesalius met with a tragic end. He was wrecked on the island of Zante where he died in his fiftieth year.

Before the age of Vesalius the great artists Rapheal, Michael Angelo and Albrecht Durer were keen students of the human form. Greater than any of these and antedating them is Leonard da Vinci, the universal genius in whom the new spirit was incarnate. From the many anatomical sketches from his hand we have first accurate representation of the structure of the body.

At Padua School Vesalius was succeeded by Fallopius, one of the best known names in Anatomy. At his death in 1565 Fabricius succeeded him. He built at his own expense a new anatomical amphitheatre which is probably the oldest existing anatomical lecture room. Fabricius demonstrated the valves in the veins as general structure in the venous system.

William Harvey had repeatedly observed Fabricius' demonstrations of valves in the vein. Later in life Harvey told his friend Boyle that it was the position of the valves of the veins that induced him to think of a circulation.

The 17th century was an unsettled time for Europe. The middle of the century ushered in a frivolous era which thwarted scientific development and which in the following century terminated in the French revolution. However, it was an age of individual scientific endeavour.

Marcello Malphigln 1628-94 was the founder of Histology and Professor of Anatomy at Bologna Pisa Messiona. He made an epoch in medicine by his investigation of the embryology and contributed 12 plates accompanying his royal society memoirs "De formatione pulli in Ovo and De Ovo Incubato". His name has been eponymically preserved in the malpighian bodies of the kidney and spleen.

Thomas Willis, 1621-75 was Sedleran Professor of natural philosophy at Oxford. Willis' Cerebri anatome 1664 was the most complete and accurate account of the nervous system which had hitherto appeared.

Regner de Graaf, 1641-73 gave the first account of the structures called in honour of his name the graafian follicles (vesiculae Graafiianae).

Joham Conrad of Schaff Hausen, Switzerland, gave an interesting account of payer's glands in the small intestine and solitary follicles of large intestine.

Johann Comad Brunten, 1653-1727 of Diessonhofen, Switzerland, discoved Brunners glands in the duodenum of dog and man in 1672, publishing his results in 1687.

Neils Stenson 1648-1686 of Steno Copenhagen was an anatomist, physiologist, theologian and geologist. His name is permanently associated with the duct of the parotid gland which he discovered in the sheep in 1661.

Francis Gisson (1597-1677) of Dorsetshire a graduate of Cambridge, gave the first accurate description of the capsule of the liver and its blood supply.

The 17th century marks the revival of learning.

The 18th century was an age of theories and systems. A new contibutor to intelectual progress during the 18th century was Scotland. In Great Britain, anatomic study received a mighty impulse from the teaching of the brothers Hunter, William Hunter, 1718-83, built the famous anatomic theatre and museum in Great Windmill street where the best British anatomists and surgeons of the period including his brother were trained. His greatest work is his Atlas of the pregnant uterus.

His special discovery of the decidua reflexe and the separate matorial and foetal circulation in which his brother had a part is the foundation of the modern knowledge of placental anatomy.

He described the ramifications of the olfactory nerve in the nose, the arterial supply of the gravid uterus and discovered the lacumal ducts in man and many features of the lymphatic system.

As a biologist, Hunter dissected and described over 500 different species of animals. His aim was to connect morphology with physiology by studying relations between structure and function.

Sir Charles Bell, 1774-1842, published 'A new idea of the anatomy of the brain and nervous system. He writes 'on lying bare the roots of the spinal nerves I found that I could cut from the posterior portion of the spinal marrow without convulsing the muscles

JOHN HUNTER * VESALIUS * GALEN

of the back but on touching the anterior fasciclus with the point of the knife the muscles of the back were immediately convulsed." This is the first experimental reference to the functions of the nerve roots in literature.

John Hunter was trained by William his brother. Hunter's work was many sided. We can measure his magnitude not only in his writings but in the great museum of over 13,000 specimens which he collected and by the influence he imparted on such pupils as Home, Wright, Aslley Cooper, Abernethy and others.

Till the 19th century no concerned action was taken by the anatomists to cadavers by legitimate means. In 1828 two

Edinburgh men Burk and Hare committed a series of 16 murders for procuring skeleton for sale. Parliament passed the Warburten act in 1832 which put an end to such serious abuses. Legal meanr were provided for obtaining cadavers for dessection purposes.

The pioneers in anatomy had presented the subject with great skill, observation and thoroughness. The discovery of advance optical aids and the ex-rays has formed the basis for modern research.

Teachers of morbid anatomy are now attempting to corrilate the anatomy of the dead more closely with that of the living.

The history of anatomy is incomplete without a brief note on the knowledge of the structure of the human body possesed by our ancients.

The 369th chapter in Agnipurana is entitled "Parts of the human body" in which the statement on the skeleton occurs.

Vishnu Dharmothra Purana contains a chapter Sareera or Anatomy. The author and age of this treatise is unknown.

In the School of Susruta (6th Century B.C.) there can be no doubt that they practised the art of human dissections. His compendium contains a passage which runs thus:— Any one who wishes to acquire a thorough knowledge of anatomy must prepare a dead body and carefully examine all its parts. For it is only by combining both direct ocular observation and the information of text books that thorough knowledge is obtained.

To-day the tradition of Anatomy in India traces back to the impact of the western trading companies and later the establishment of the British system of medicine in India at different centres in the 19th century India. Teaching institutions sprang up at different centres in the 19th century where instruction in Anatomy was impatred by Surgeons. In the recent years the chair of anatomy has been occupied by those specialised in the subject. To-day the teaching of Anatomy is reorientated from time to time on practicable lines commensurate with the tremendous advance made on the medical field. Great stress is laid on living anatomy.

Two of the highlights in the progress of anatomical work and teaching in this country should be mentioned. In 1951 the Anatomical Society of India was started. All anatomists registered in India are invited to become members of this Society. Annual conferences of the Society are held at the begining of each year where the anatomists of India can exchange views or consult others at different teaching centers to discuss matters of teaehing, research and various other aspects relating to the subject of Anatomy.

Another important landmark has been the opening of the Institute of Anatomy at the Stanely Medical College in Madras, Dr. A. Ananthanarayana Ayer, B.A., M.B.B.S., M.SC, F.A SC., is tho Director of this Institute where teachers of Anatomy from all the states in India are admitted for post-graduate work.

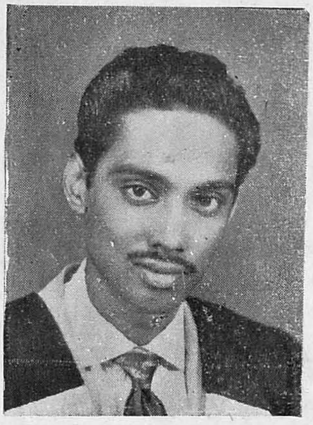
Original work in anatomy is taken up by few workers in this country. There remains yet a vast field where biological truths still lie hidden in the structure of the human body.

"The Surest way to hit a woman's heart is to take aim kneeling."

—*Dougles Jerrold.*

TOP OF THE HEAP....

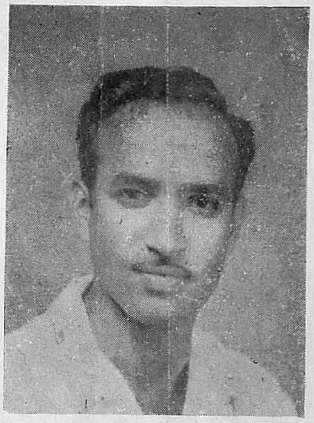
R. KALIRAJAN.
General Secretary
I came, I saw, I Concurr'd.



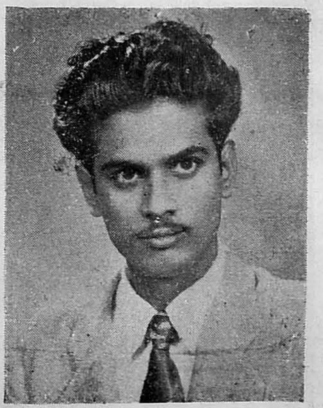
P. J. CHENNAKESHAVALU,
President.
...on the first pair of high heels....

MISS. GANGA R. MENON,
Vice-President.
...Pouring oil on troubled waters...

A. MOHAN RAO,
General Editor
....stoop low to aim high...
(*Associate. Editor*)

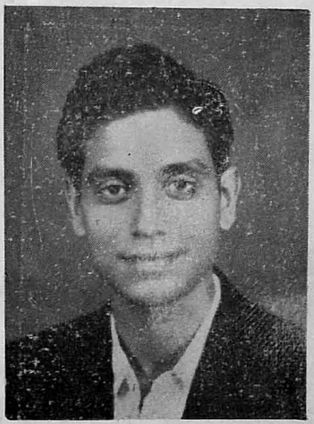


G. CHOWDAPPA,
Secretary, Rural Medical Service League
...Problems–eternal if possible.... !!



A. G. PREMACHANDRAN,
Arts Secretary
....please all, lose all....

MISS. LEENA. M. WILLIAMS
Associate Secretary
...normal, cool, uncollected....

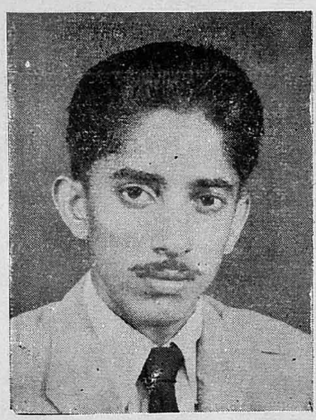


C. S. RAMACHANDRAN
Sports Secretary
...service with a flourish...

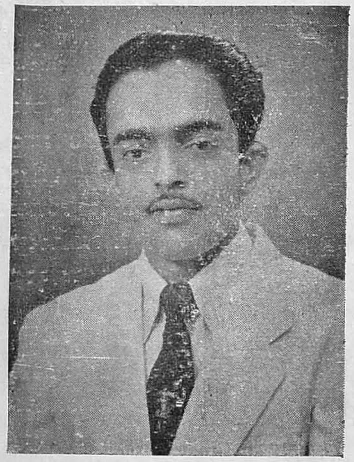
... AND THE TAG - ALONGS

T. CHINNARAJ,
Asst. Secretary
....Obedience is a talent...

MISS. V. R. PREMAKUMARI
Associate sports Sec.
...that poise... ! !



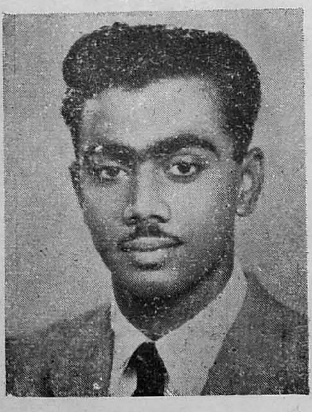
M. GOVINDARAJ,
Associate Editor,
...pleasure, the end of business?...



R. PRABHAKER,
Final M. B. Rep. (New Reg.)
...flashes of silence...

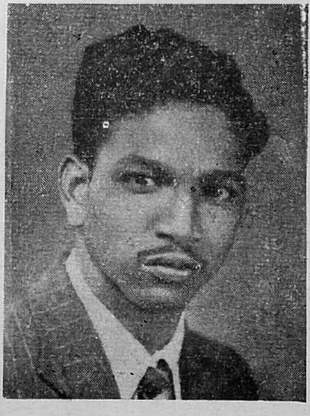
R. RAGUPATHI,
Final year Rep. (old. Reg.)
...soft words, hard work...

P. ANNAMALAI,
II. M B. Rep.
...in the fool-steps of others...



R. BALASUBRAMANIAM,
II year Rep.
...efficiency plus, plus...

MISS. PAPAKUMARI,
Lady pre-clinical Rep.
...only pebble on the first year shore...



T. A. MANIKASWAMY,
I year Rep.
...just beyond comment ! !...

A Brief Review of the History of Physiology

By

DR. K. MADHAVAN KUTTY, M.B.B.S.,

Tutor in Physiology, Stanley Medical College.

The importance of studying the history of Medicine or, indeed, the history of any subject is in the fact that a mere summary of Concepts and the results obtained therefrom, without a knowledge of their evolution cannot give any true picture of the matter. Without being aware of the laborious foundations upon which an edifice is built we can gain but a superficial idea of the great superstructure. The history of medicine has been inextricably bound up with the history of physiology and it is rightly so since Physiology forms and has always formed the basis of medicine.

The history of physiology in its entirety would carry us back to the remotest periods of antiquity, but we cannot travel so far within the compass of this small article. At the dawn of history, medicine was by no means a new thing, but the medicine of the ancient was in general based upon magic and upon astrology than upon science. The fiirst person who insisted upon a scientific and ethical aspect for medicine was Hippocrates of Cos, (4th or 5th century B.C.) and his teachings held unchallenged priority for many years, until the time of Galen of Pergamum, physician to the Emperor Marcus Awelins.

The widest and most original discoveries and studies have been accredited to Galen—in anatomy, physiology, the study of diseases and drugs. One of his important discoveries was that the arteries were filled with blood, whereas for five centuries from the time of Erasistratus of Alexandria (3rd century B.C.), the arteries were believed to be filled with air and only the veins with blood. From his further researches was formulated the famous theory of the "Pneuma" or spirits. According to this theory food first becomes "Chyle" in the alimentary canal, is absorbed into the blood and being carried at once to the liver, is there converted into blood and is provided with "natural spirits", a nutritive principle. The blood, thus endowed, and mixed with the blood of Vena Cava, is distributed all over the body by way of veins, in an ebb and flow motion, and also reaches and recedes from the right ventricle. A part of it, however passes from the right ventricle by invisible pores into the left side, and another part passes to and fro along the pulmonary artery or "arterial vein", and reaches the lung (which it nourishes, at the same time,) giving out into the expired air all its noxious "fulignons" vapours. That part of the blood from the right side which seeped through into the left side is next mixed with air, which, drawn into the lung during inspiration and passing along the pulmonary veins or "Venal artery" reaches the left side of the heart where heat is formed, and the "vital spirits" engendered, giving the blood its bright colour. The vital spirits were necsssary for life and movement, and the vitalized blood ebbed and flowed along the arteries with their pulsations, expansion (distole) of the heart and arteries occurring together at one phase and collapse (systole) at another. When the blood raached the brain, the "animal spirits" were generated: thus pneuma rid of air and blood, could pass down the nerves to cause movement and sensation. This theory, incongrous as it might appear today held sway for more than fourteen long centuries.

The most famous of all text books of medicine is of Persian origin. This is the "Canon" of the persian philosopher Avicenna (A.D. 979-1037). The book, follows the ideas of Hippocrates and Galen itnermingled

with those of Aristotle. It deals in five books of which the book on physiology constituted the first volume.

In the middle ages medicine was purely dogmatic. What the ancients had said, what Hippocrates, Aristotle, Galen and Avicenna had written was right, and there were none to dispute the oracular pronouncements of the past. If we except Roger Bacon, an experimental genius, whose discoveries were premature and consequently without any wide influence, untill the reawakenning of knowledge in the fifteenth, sixteenth and seventeenth centuries, no one dared to question the truth of the old authorities. Many fallacies which were then accepted could have been shattered so easily by experimentalscience. But experimental science was asleep.

The beginnings of the modern experimental period may be said to date from Paracelsus, that strange sixteenth century figure, sorcerer, philosopher, alchemist and physician, who overthrew the absolute sovereignty of Hippocrates, Galen and Avicenna. That men should research into the workings of nature for themselves, was the keynote of his teaching at the university of Basle; and he startled the world by publicly committing the "Canon" to the flames of a students bonfire.

One of the chief points in the galenical doctrine concerned the route by which the blood of the right side of the heart reached the left side. Doubt was first thrown on the permeability of the interventricular system, by Vesailus in 1543 and later by Realdus Columbus in 1559. Next, the disposition and action of the valves of the vein were described by Fabricus at Padua in 1574; the logical inference from his discovery was, however, only pointed out later by his pupil, William Harvey.

William Harvey demonstrating his researches to Charles I and the boy Prince.
(*Painting in Royal College of Physicians*)

—*By* R. HANNAH.

The discovery that blood travels round in a circuit, returning again and again to the same point, was made by William Harvey, physician to Charles I and was given to the world in a book of 72 pages, printed at Frankfurt in 1628. This has been the greatest discovery in the medical science and actually laid the foundation of modern scientific medicine. In his masterly though modest treatise "Exercitatio Anatomica de motu cordis et sanguinis in animalibus", Harvey through patient and prolonged experimentation and observation came to the conclusion that circulation is a logical necessity to which we should be led by the contemplation of certain elementary facts *e.g*, :—

(i) The arrangement of the valves in the heart and viens is such as to allow of one-way movement only.

(ii) "If the heart is grasped in the hand, it may be felt to become harder during its action" when this happens, the ventricles become smaller and the arteries expand; if an artery is

severed, blood spurts from its central end at each heart contraction,

(iii) Since, at each contraction of the heart, blood is forced into the arteries and cannot return, it follows that, even if only a small quantity were so expelled there would not be enough blood in the heart, or even in the whole body, for the process to continue, nor could all this blood remain in the arteries. The heart, must, therefore recieve blood continously from the veins and pass it continuously into the arteries. If a vein is compressed or tied by a ligature, it swells up on the side farthest from the heart, and collapses on the side nearest to the heart. With an artery, it is the reverse. Hence the blood must be passing continously from the arteries, through the tissues into the veins. Similarly, the blood in the right ventricle must pass by way of the pulmonary artery and lungs to the pulmonary veins and so reach the left side of the heart.

Our wonder at the miraculous discovery, and the clear logic that lead to it increases when we know that Harvey could not be certain as to how the blood passed through the tissues from arteries to veins. It was only in 1661,that Malphigii discovered the capillaries with the help of the microscope and thus provide the missing link.

Once the fact of the circulation was established further aspects soon pressed for attention. The next important experimental study was made by an English clergyman Rev. Stephen Hales (1733), By introducing brass tubes into a mare's artery he demonstrated the relative pressures in those vessels and distinguished end-on fromlateral pressures. The eighteenth and ninteenth centuries are studded with epoch-making discoveries in the Cardiovascular system and one can but only ennumerate the famous name like Laennec, who invented the Stethoscope, Fick, who was the first to enunciate the principle for measuring cardiac output, Reemak, Gaskell, Ludwig and Povisselle who made modern Hymographic observation possible, Riva-Roceis inventor of the modern B.P. apparatus, Marey, Einthoven and others.

As explained earlier it is difficult to pay any homage to the monuemental work done during this period due to limitation of space— nay it is difficult even to mention names. Neverthless certain names do arise in our minds as for example that of Claude Bernad. He was the son of a Burgundian Wine-Grower and early in life he worked in a pharmacitst's shop at Lyons. Here he was speedily disillusioned about the value of the mixtures prepared for the cure of the customers. There was a famous syrup which seemed to cure everythtng and for which he was always being asked. Bernard was astonished to discover that the syrup varied very much in composition ; in fact it was compounded from all the odds and ends and spoiled drugs of the shop.

Claude Bernard turned his attention to writing plays and his vaudeville comedy "La Rose du Rhone" met with some fair provincial success: but a critic who read his next work, a tragedy, advised him to take up medicine. Thus instead of a great playwright he became one of the most famous physiologists of his day.

Before his time physiology in France was much handicapped by the teachings of the "Vitalist" who held that " the Phenomena of living bodies could never be the subject matter of exact experimental enquiry." It was a defeatist and stultifying doctrine to presuppose that the business of the physiologist is merely to describe and to make no attempt to explain.

Bernard followed his teacher Magandie, and improved on his experimental technique by combining it with rational speculation. His first researches were in the field of nutrition, and he drew the inference that unaltered

cane sugar is useless for nutrition unless the stomach juices altered the sugar in some way so that it became suitable, for obsorption. This was the first clue to the now well-known fact that all the more complicated surgery and starchy substances must be broken up by "Ferments in the bowel until they are reduced to the simplest kind of sugar, and that until this is done sugar cannot be used bythebody-tissues. Claude Bernard also did work on fat digestion, and also found out that liver can manufacture glucose, which was a blow to the well-established theory that each organ had one function. The existence of nervous control of blood vessals was the discovery of Claude Bernard and it may truly be said of him that there was no branch of physiology which he did not touch or adorn with his theories.

This question of vitalists versus physico-chemical theorists which we have referred to has been a fascinating battle in the history of physiology. The main scene of the battle was laid in the realm of secretion and on the role of the kidney. The battle royal that ensued between the followers of Haidenhain advocating vital action and Ludwigsideas based a purely physico–chemical theory is well-known Cushy in adumbrating his modern theory has remarked "If this helps in destroying the cast remparts of vitalism, my purpose would have been served." In course of time, 'vitalism' died a natural death.

It would be difficult to mention more about ninteenth century physiologist, but the name of Helmholtz has to be mentioned, atleast to pay a tribute to the remarkable contribution made by a leader of an alied science (physic) to the improvement of knowledge in physiology. The science of opthalmology has been placed on a scientific basis by the introduction of the optholmoscope and phakoscope, which are two of Helmholtz's lasting contributions. Besides he has formulated theories on all aspects of special senses and his theories are not only numerous, but time has proved them to be very correct.

Twentieth century may be rightly called the age of applied physiology and chemistry. These two sciences have made such rapid and multifaceted advances, that they have changed the face of modern medicine. Diognosis today is largely aided by laboratory investigations, and treatment in many instances are based on physiological principles. The greatest advances have been made in the field of endocrinology, vitamins, Biological activities of the cells etc. Each step in this Saga of progress has been achieved by co-ordinated activities of teams of workers, that the story of each discovery is a history by itself.

In the field of endocrinology, it was Starling who gave us the name "hormone". Banting and Best working in the university of Toronta discovered and isolated "insulin" and thus gave new hopes to millions of people all over the world, who were hitherto condemned as "diabitics". Another great name in the field of Endocrinology is Houssay who recieved the Noble Prize for his monumental work on the hypophysectomized, depanereatized animals, known as Houssay dogs. This great physiologist has set up a school of workers under him in Latin America, who have done brilliant work in various fields in recent times. Hans Selye and his work on the stress syndrome, won Enler's elucidation of the adrenalin nor adrenaline complex, and the marathon work done by Kendall and others on the chemistry of steroid hormones are landmark in the history of modern endocrinology.

In the field of vitamins, the work of Minot and Murphy and their discovery of vit B12 have made pernicious anaemia no longer pernicious. And India can be legitimately proud of Yellapragada Subba Rao, and his contributions to the subject of physiology in general and Folic acid in particular.

It is difficult to conclude without paying our homage to Haymans whose work on the Carotid Sinus has had such far reaching results and which has earned him a Nobel

Prize, to Pavlou who blazed a new era in the field of neurology by his experiments on conditioned reflexes, to Cajal, Adrian, Sherrington and others who have put our understanding of the nervous system on a rational basis, and to hundreds of thousands of others, the unknown research workers who are toiling ceaselessly and who have dedicated their lives to the cause of research, that others might lead a fuller and more complete life.

With all this to our credit, we will still be rash to be over-jubilant. As the horizon of knowledge spreads slowly in every directions one individual can hope to master only an increasingly narrow sector of the whole. Specialism is inevitable and once it has gained the upper hand there can be no unity in medicine. Can we hope for some intellect which may integrate the scores of seperate branches into a whole living tree? Hopefully let us make medicine speak the words which Robert Browning put into the mouth of the dying Paracelsus.

"..........If 1 stoop
Into a dark tremendous sea of cloud,
It is but for a time ; I press God's Lamp
Close to my breast ; its splendour soon or late
Will pierce the gloom ; I shall emerge one day.
You understand me? I have said enough ?

" High heels were invented by a woman who had been kissed on the forehead."

—Christopher Morley
(J. A. M. A.)

A gastric ulcer *is something you get if you go mountain-climbing over mole hills.*

—Mike Connolly.

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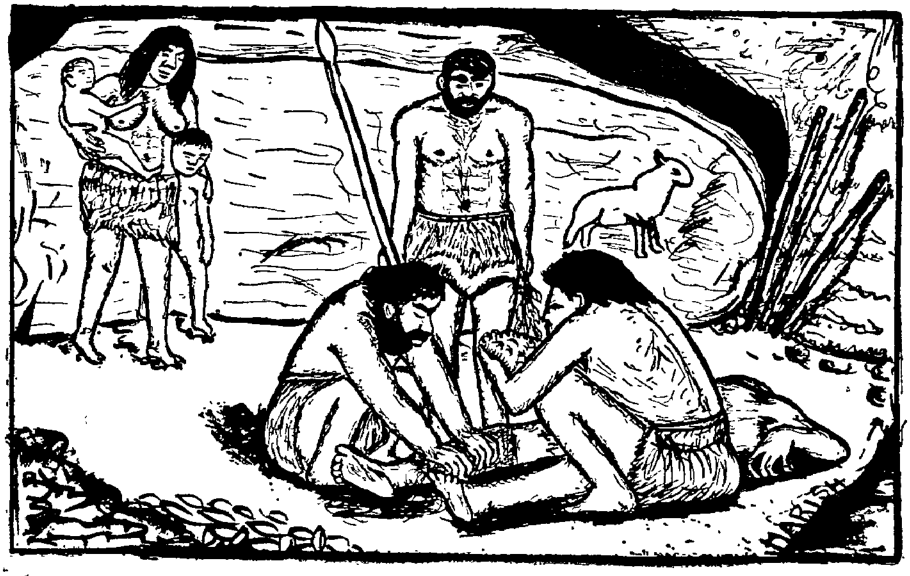
History of Pharmacy in Pictures.

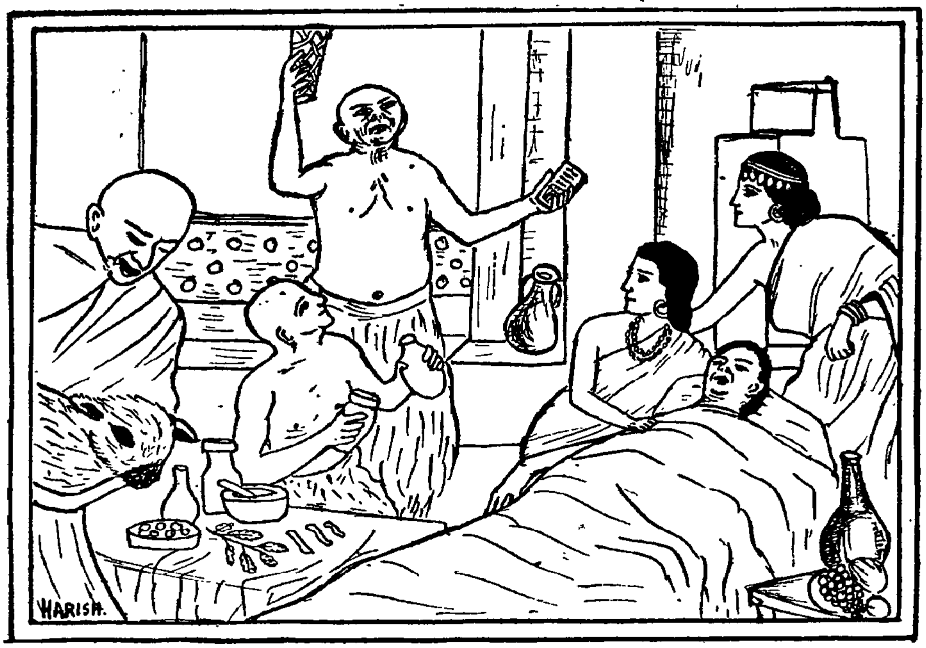
(*Courtesy: BARKE, DAVIS & COMPANY*)



HARISCHANDRA

BEFORE THE DAWN OF HISTORY.

From beginnings as remote and as simple as the crude caveman's method, came our profession of Pharmacy. Ancient man learned from instinct, from observation of birds and beasts. Cool water, a leaf, or mud, were his first soothing applications.



HARISCHANDRA

PHARMACY IN BABYLONIA. (ABOUT 2600 B. C.)

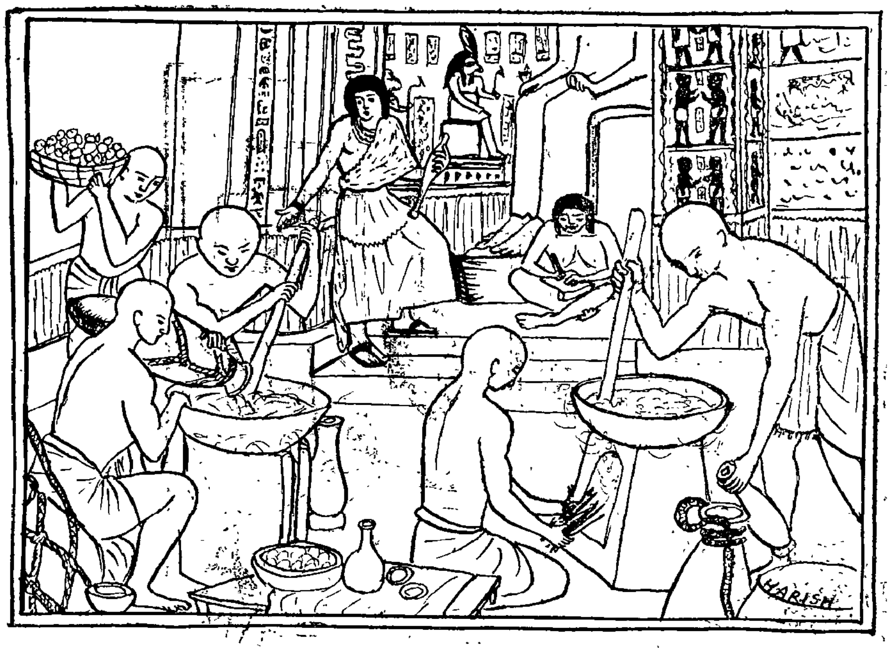
Babylon, jewel of ancient Mesopotamia, provides the earliest known record of practice of the art of the apothecary

HARISCHANDRA

PHARMACY IN ANCIENT CHINA. (ABOUT 2000 B. C.)

Chinese Pharmacy, according to legend, stems from Shen Nung, Emperor who investigated the medicinal value of several hundred herbs. Still worshipped by Chinese drug guilds as their patron god, he is pictured examining familiar herbs, barks and roots.

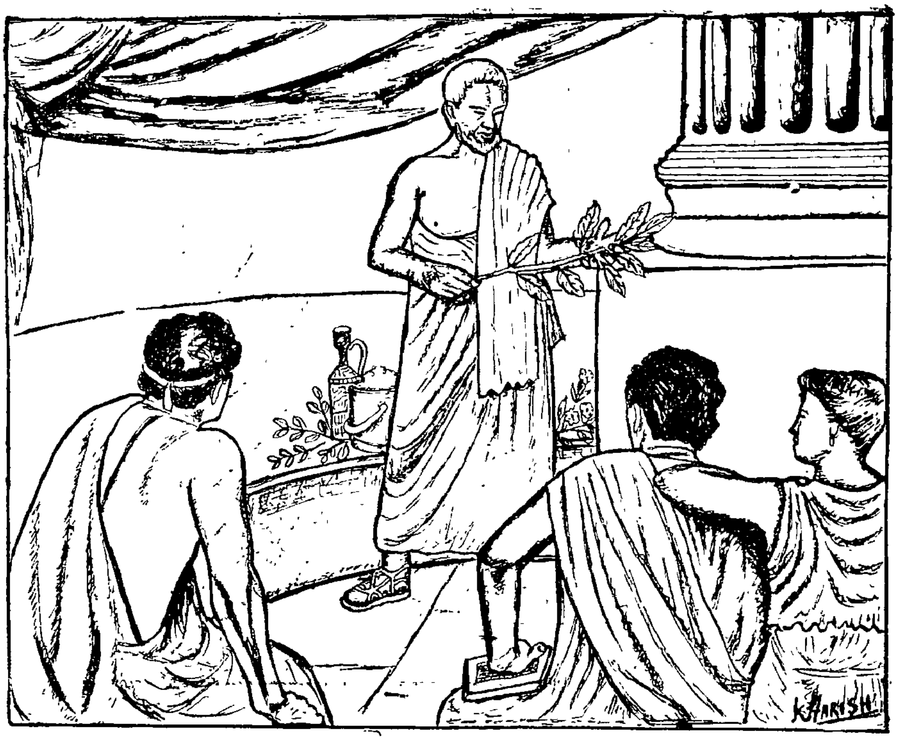
HARISCHANDRA



DAYS OF THE PAPYRUS EBERS. (1500 B. C.)

Though Egyptian medicine dates from 2900 B. C., best known pharmaceutical record is the Papyrus Ebers (1500). Egyptian pharmacists were also priests and practiced their art in the temples. In such a setting as this, the Papyrus might have been dictated.

HARISCHANDRA



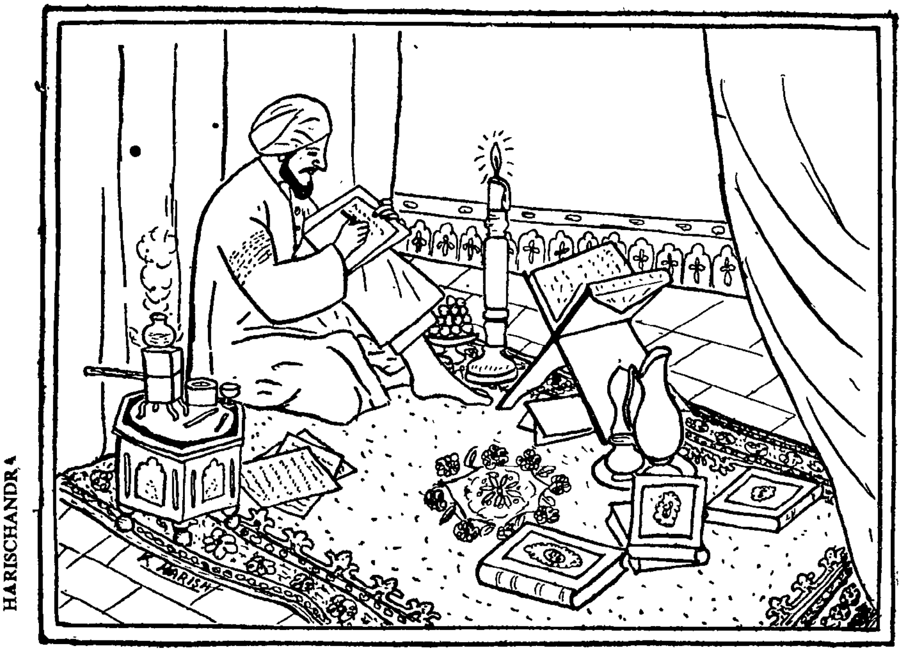
FATHER OF PHARMACOLOGY. (300 B. C.)

Theophrastus, among the greatest early Greek philosophers and natural scientists, is called "the father of botany." His accurate observations and writings dealing with the medicinal qualities of herbs entitle him to be considered "the father of pharmacognosy."

HARISCHANDRA

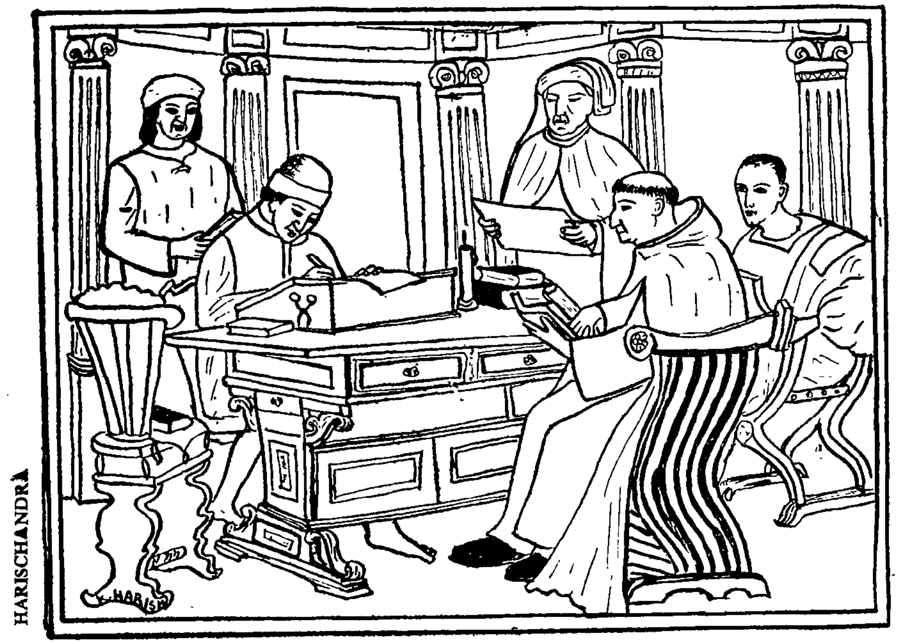
GALEN...EXPERIMENTER IN COMPOUNDING (131 - 201 A. D.)

Galen was a famous physician of ancient Rome ; he also practiced and taught pharmacy. His principle of preparing medicines, was practiced in the Western world for 1500 years ; and his name is still associated with a class of drugs, called the Galenicals. .



AVICENNA...THE " PERSIAN GALEN. "
(About 980 - 1037 A. D.)

Avicenna or Ibn Sena, was a Persian physician and pharmacist who contributed greatly to the progress of medicine during the Arabian era. He wrote his observations in Arabic, and his teachings are still dominant influences on Oriental medicine and pharmacy.



FIRST PHARMACOPOEIA.
(1498 A. D.)

The first idea of a pharmacopoeia, with official status, originated in Florence. The **Nuovo Receptario,** written in Italian, became the legal standard for the city state in 1498. It was prepared by the Jesuits.

Milestones in the Growth of Pharmacy

By

DR. A. R. GOVINDA RAO, M.B.B.S., M.S., (Yale.)
Professor of Pharmacology.

Pharmacy is the art and science of identifying, selecting, preserving and combining drugs of animal, vegetable or mineral origin.

The word "Pharmacy" comes to us from Greek root "Pharmakon", meaning originally a chram, then a poison and finally a drug.

Looking back into the history of medicine in India one discovers in one of the earliest Sanskrit documents, the Atharvana Veda that medicine was wholly theurgic. Treatment consisted of usual versified spells and incantation against the diseases or their human agents like witches or wizards. In the Brahmanical period (800 B. C. to 1000 A. D.) medicine was entirely in the hands of Brahmanical priests and scholars. The three leading texts of medicine were the Charaka Samhita, a compendium made by Charaka (2nd century B. C.), Sushruta (5th century) and Vagabhata (7th century. A. D.) The Materia Medica of India was particularly rich; Charaka has mentioned nearly 760 medicinal plants of which Nard, Cinnamon, Pepper, Cardomum were native. The soporific effects of Hyoscyamus and Cannabis Indica were known and their employment in the surgical aneasthesia was according to Burton, of great antiquity among the Hindu doctors. In seeking an artificial paradise or relief of pain by means of narcotic or intoxicants like, Somarasum, alcohol, opium, hashish, or mescal, priority certainly belongs to ancient men of our land.

Ancient greek mythology :—The pharmacy and medicine were so closely interwoven with superstition and fable in the early days that it is difficult to separate the real from the mythical.

Herms, Bacchus, Apollo, Hephaistos and Centaur Chiron are among the ancient mythological personages to whom has been attributed the origion of the healing art. The most prominent of all these mythological personages was Eesculapius, the son of Apollo and pupil of Chiron. The emblem of Aesculapius, the single serpent on a staff is still used as a medical symbol all over the world. The Caduceus showing two serpents on a staff surmounted by wings is the emblem of Herms and is used as the medical insignia of the U. S. Armed Forces. Aesculapius is believed to have existed about 3,000 B. C.

Egypt :—Isis and Osiris are the noted mythological personages of Egypt. The earliset document pertaining to medicine and Pharmacy is the papyrus or scroll called the "Papyrus Ebers". which is a continuous roll of manuscript about a foot wide and over 250 feet in length. It is believed to have been published about the 16th century B. C. and contains chapter not only on remedial agents and methods for compounding but also on means of conjuring away diseases. It is said that liver has been mentioned as a remedy for anaemia. Egyptian literature recognized clinical syndromes which could be treated successfully and others which could not be. They described in detail procedures for the preperations and administration of remedies. Many of their prescriptions contained combinations of therapeutic materials (Polypharmacy). The exact treatment of the patient and dosage of the medicament were prescribed with religious precision. Even diagnostic tests which are infallible and easy to perform have been described in such an early document. For instance, women who want to know whether or not they were pregnant, weregiven the following suggestions— "Plant some barley seeds in a

vessel containing earth and add a small quantity of urine each day. If the barley grows, the pregnancy test is positive. If it fails to grow the test is considered to be negative. This interesting phenomenon has quite a scientific basis. The urine of non-pregnant women contains very small quantities of Oestrogens, while early in pregnancy the oestrogen content rises greatly. It has been shown experimentally that the oestrogens are powerful stimulants to plant growth.

Hipocrates :— A noted Greek physician born on the island of Cos in 460 B. C. is supposed to be the father of scientific pharmacy and medicine. Hippocrates' fame is based largely on his assumed authorship of that noble and idealistic code called the "Hippcratic Oath" which is the foundation of the modern medical ethics. In the writings under his name nearly 400 drugs are mentioned, many of which are still used. Along with many inert substances in use at this time are to be found such modern drugs as Belladonna, Peppermint and Aniseed.

Another noted compiler of herbs among the Greeks was Theophrastus (372-287 B. C.) who has described almost 450 plants of supposed medicinal value.

After Theophrastus has presented his systamatic description of the B o t a n y of classical times his work was applied medicinally about 57 A.D.by Dioscorides, the surgeon of Nero. Unlike the Egyptian priests Diecorides classified his materia medica by substance rather than diseases. Ultimately this precedent led to the development of modern pharmacopeias. He not only described carefully the individual crude materials in each medicament, but also gave the method of preparation and administration.

One century latter Galen (131-201 A. D.) extended the work of Discorides by developing an elaborate system of polypharmacy which was destined to influence medicine profoundly for some fifteen hundred years. Born at Pergamus, the son of an architect, he bagan the practice of medicine at Rome in 164 A. D. He became a verasatile practitioner and wrote nearly thirty books on pharmacy. He prescribed hyoscyamus, h e l l e b o r e a n d colocynth as well as wine, honey, turpentine and hartshorn. Gallen's name survives even today associated with the term Galenicals, which is used to describe a crude mixture of drugs usually of plant origin.

By the time of Romans the recorded information on drugs had grown in magnitude if not in accuracy. The narcotic effects of the opium popy were known and employed. The pupilary dilating action of Belladonna was appriciated. The poisonous effect of sea onion squill had been described and the lethal effect of water hemlock had presumably been employed as a means of capital punishment. A whole host of known puragatives such as Colocynth, Scammony and Elaterium were administered at this period.

Dark Ages.—The first six centuries of the christian era are what are known as the Dark Ages, because of the lack of progress of civilization and all that pertains to it during this long period. Pharmacies, as separate places where drugs were compounded and sold were first instituted during the Arabic period Notable among the Arabs was "Avicenna" or Ibn Sina 'the prince of physicians. He wrote hundred works aud enjoyed a lucrative practice at the courts of several Caliphs of Baghdad. Among the complex combinations of drugs which he employed are discriptions of Sulphuric Acid and Alcohol with an account of their preparation and properties.

During the second half of the middle ages Greek systems of medicine had a rebirth with the founding of the early universities at Bologna, Oxford and Padua. However, during this period consideration of medicines rested not on odservations, as it had in much earliar times, but on the absolute authority of the ancient texts. The newly founded univer-

sities considered drugs only from religious or philosophical points of view. Theophrastus Bombostrus Von Hohenheim otherwise known as Philippus Aureolus Parcelsus, professor at the university of Basle was the greatest critic of Galen's teachings. Paracelsus had the Aepulian herbal burned in public and categorically rejected the teachings of Galen. He was a strong advocate of the use of the metals in the treatment of disease and deserves credit for introducing Mercury in the treatment of Syphilis.

The first undoubted record of the separation of medicine and pharmacy is found in a decree of the Emperor Frederick II of Sicily, who, in 1233, just after the close of the Crusades, issued an edict regulating the practice of pharmacy in his kingdom. This law mentions the "apotheca" as being the warehouses where drugs and medicines were stored. The compounders were called "confectionarii" while the sellers of simple medicines were called Stationarii and the shops were called stationers.

Physicians were neither permitted to conduct pharmacies nor to derive any profit from the sale of medicine. Pharmacies were permitted only in big cities and under restrictions as to management and responsibility. This undoubtedly was the origin of the restriction of the practice of pharmacy. The restriction is still maintained in many European countries.

At this time physicians used no other drugs than those recommended by the ancients Most of these came from far off lands, hence were very costly. In addition many herbs and plants were required to be collected when the Sun and planets were in certain constellations and certificate of their proper origin was needed. The invention by the Arabs of distillation, sublimation and other chemical processes necessitated laboratories, furnaces and costly apparatus and so those who devoted to pharmacy were indemnified by an exclusive trade and thus they were kept under close and effective supervision.

From 15th to 17th centuries pharmacy probably reached the zenith of its success. The rarity and cost of raw materials, the many difficult and tedious operations which had to be undertaken to prepare even the simplest medicines all combined to make the pharmacist absolutely indispensible to the success of the physician.

Carl William Scheele, Dover and Fowler were prominent pharmacists of the 18th century. The names of Fowler and Dover are attached to pharmaceutical preparations still used today.

In the 19th century pharmacy developed along more scientific lines. Many alkaloids were discovered and introduced into medicine by such famous personages like Pellitier, Caventou, Serturner etc. Books called Pharmacopoeias or dispensatorines appeared for the guidance of physicians and Pharmacists. The earliest to appear was in 1542 by Valerus Codus. The first London Pharmacopea appeared in 1618, and the first national pharmacopia for France known as French Codex was issued in 1818. The United States Pharmacopea appeared in 1821 for the first time. Till 1953, eight British Pharmacopeias have appeared for the guidance of pharmacists and physicians.

The practice of pharmacy has changed markedly since the historic periods so briefly described here. At the present day we find huge pharmaceutical concerns with vast financial resources having branches all over the world manufacturing many useful and life saving drugs and supplying them to the physician. Their process of manufacture is usually well controlled and the final product has a uniform composition and action on account of the strict chemical and biological standardisation adopted. Many of the herbal remedies are being gradually replaced by synthetic chemically pure substances which is the main reason for the drugs being available so cheaply and in such large quantities. Organic Chemistry has become the right hand of pharmacy and it will not be long before many of the important hormones are synthesised and produced in a pure state.

TWILIGHT SLEEP...

From the earliest days of human history, physicians and surgeons have been concerned with the problem of abating the pain caused by the surgeon's knife. Soporifics and narcotics were often used to induce a state of 'twilight sleep' while an ancient Chinese surgeon, named Hua To, hit upon the wily stratagem of keeping his patient engrossed in a game of chess as he amputated his arm.

It was only, however, with the development of modern anaesthesia that the agony and the suffering of the surgical table have been brought to an end.

ICI

Today, I.C.I. serves the surgeon with safe and efficacious anaesthetics they can use with perfect confidence—'Trilene' for anaesthesia by inhalation ; 'Kemithal' for intravenous administration.

OF QUACKS, KILLERS & CONCOCTIONS

By

A. BHASKER RAO,

III Year

If you look into a doctors bag, it may show surprising neighbours; next to Tetracyn (1953) there is Ephedrine (2760 B.C.); beside Picrotoxin there are salicylates, morphine, colchicine, and endless other remedies of hoary ancestry. Some of these drugs have been used by the primitive medicine man and witch-doctor in his cunning attempts to impress his people; some of them have been produced after years of labour, due to the dogged determination and persistence of both doctors and laymen. Behind all these drugs is a story, inspiring and shameful at the same time.

EIGHTEENTH CENTURY PHYSICIANS AND QUACKS

Hogarth's cartoon entitled, "The arms of the Honourable company of undertakers", represents some of the physicians of the day, most of whom are sniffing vinaigrettes in the heads of their canes. Two of them are inspecting urine in a flask, and one is about to taste it with his finger. (Bottom of the picture).

The three figures in the upper part of the picture are, from left to right, Chavalier Taylor, Mrs. Mapp and Spot ward,—three notorious quacks.

From the time, man came to know about the diseases that afflicted him, innumerable number of drugs have been used to treat them; but only a few of these have had any influence on the symptoms or the diseases. Most of the substances that have been used as remedies depended upon their appeal to the imagination for the healing virtues they were believed to possess. Holy relics were formerly applied to the outside of the body and for the same reason "medicines" with no more healing properties than the holy relics were applied to the inside of the body.

In any part of the world, in any condition of life, men have been curious since the beginning of time. If they were attracted to any sort of bark, root, leaf or a stone and brought it home, they were soon convinced that it had medicinal value for whatever that ailed them. And by the time, everyone's impressions were added together, the remedy had gained surprising powers.

Thus curative properties have been attributed to nearly every substance when it was new, unusual, or difficult to obtain. When the novelty of these substances wore off, they ceased to be medicaments. The potato when first introduced into Europe, was sold for a high price and was not used as a food but as a "medicine". It was supposed to be, an aphrodisiac useful in curing impotence or as an ingredient of love philters. Gold was also once used as a soverign remedy for nearly every disease that flesh could endure.

The belief that drugs are the only form of treatment was prevalent among both doctors and the lay-men even till a few years ago. Especially in the eighteenth and nineteenth centuries, people were not satisfied unless the physician prescribed a vile-tasting concotion or

a box of coloured pills. To such people medicine was like an amulet worn internally by which they were nauseated, griped or otherwise constantly reminded that they were getting well. Oliver Wendell Holmes tells of a man who had severe abdominal pain after swallowing pills from a box found on the street. The had contained pure mercury.

Superstition played a very prominant part in the selection of drugs like the root of mandrake and Egyptian mummies. Mandrake, a plant provided with a forked root suggested the shape of a human figure, if one was maniacally suggestible; and this was all the ancients needed and they used it as an amulet to enhance fertility or placed it under the pillow of the lovelorn, "for it was well known that there was naught as good as mandrake for unrequited love". But it was also given as a narcotic and judicial execution (death wine), so that it cannot be doubted that it was a mighty stuff.

Mandagora or Mandrake plant showing fanciful resemblence to human figure.

Powdered Egyptian mummies or fake mummies "made in our France" (Ambrose Pare) from dead bodies stolen from the gallows were used in the 16th century very widely. Unicorns horn was another highly prized remedy of the medeival and renaissance period. It was dipped in drinks as an antidote to poison—a precaution very much needed by the Princes and Popes of those terrible days. Also in the list of antidotes was Bezoar's stone—a stone formed in the intestines of goats, mostly gall-stones. It was reputed to be a power ful anti-dote even in the time of Charles II, until Ambrose Pare proved to him that the usage of Bezor's Stone was mere superstition. The experiment used to prove it so, was true to the spirit of the time; a prisoner about to be hanged was given the bichloride of mercury and immediately afterwards the Bezor's Stone. The physicians of the court waited to see the consequences on the ill-fated human guinea-pig. The prisoner soon doubled up with pain, bleeding from his ears and nostrils and died seven hours later, which happening convinced the noble King Charles II, of the ineffectiveness af the stone.

Disgusting substances were used in the medeival times as drugs, largely because of the impression they made on sufferer and also because they were cheaper than the Unicorn's horn Bezoars, which were the remedies of the nobility. A great quack of the renaissance, named Cotton Mather, used crushed sow bugs and human lice and incinerated toads in his extensive practice. Robert Boyle who got rid of many doubtful remedies from the Pharmacopeia, included in the revised list, as treatment for dysentry the following prescription :

Rx,

"Sole of an old shoe worn
by some man that walked
much.
Tobe ground up and taken
internally."

In ancient Egypt. physicians had a wonder remedy inthe urine of a faithful wife, for all eye troubles. The description of the troubles, people underwent to find this "drug", had been handed over us through many folk tales. Even in the middle ages, apothecaries in Europe

used crocodile dung, human excrement urine as remedies. Pliney, in his "Natural History", speaks highly of the medicinal values of menstrual blood. This medicament was supposed not only to cure diseases, but also could kill insects at a great distance and quell storns at sea. The physicians of those days seemed to make the death of their patients as unpleasant as possible;. when CARDINAL RICHILIEU, was on his death-bed, a female quack gave him horse dung mixed with white wine and the hard Cardinal drank the concoction—to the drugs.

Galen was the greatest and at the same time worst influence the science of Pharmacology ever had, in its long history. He was an active exponent of "mass" drug the rapy; he had a drug for every conceivable symptom of a disease cooling drugs for fever, heating drugs for chills and drying and moistening drugs. Galen used elaborate mixtures of herbs to restore the proper balance of qualities in the body-thus prescribing hundreds of drugs. This system was followed by many physicians even till two centuries ago, that many patients would rather have had the diseases than take the prescriptions.

When Charless II was reigning, he too suffered in the hands of his physicians like any other man. One day he fell unconscious suffered for a few days, and then died, giving all the possible heirs hopes of becoming the new ruler. From the incomplete autopsy records of the 17th century, we could guess that the king suffered from an embolism. As the first steps in the treatment, he was bled to the extent of a pint of blood ; then his shoulder was incised and an additional eight ounces of blood was sucked out. After this homicidal assault, the real drugging began First an emetic and a purgative were given and soon after a purgative. This was followed by an enema containing antimony, rock salt, and a dozen more drugs. The enema was repeated in two hours and a purgative was given. By that it seemed to the physicians that the king was almost though not quite clean inside. Then the King's head was shaved, and a blister was raised on his scalp; A sneezing powder was given and also powder to strengthen his brain. The cathartics were repeated every hour and soothing drink of barely water, white wine and abs in the was administered. For external treatment, a plaster of Burgandy pitch and pigeon dung was applied to King's feet. Then another chapter of bleeding was started and was finished with another dose purgatives. Some—more medicaments like quinine; cloves, nutmeg, dissolved pearls were given.

The King's condition did not improve, and in the emergency which threatened the royal life, forty drops of the extract of the human skull were administered, as Elixir Par Excellence. And finally the Bezoar's stone was given. That night "his Serene Majesty's strength declined, and despondent physicians brought into play the most active cordial''.

Death and the Physician.
A woodcut by Holbien.

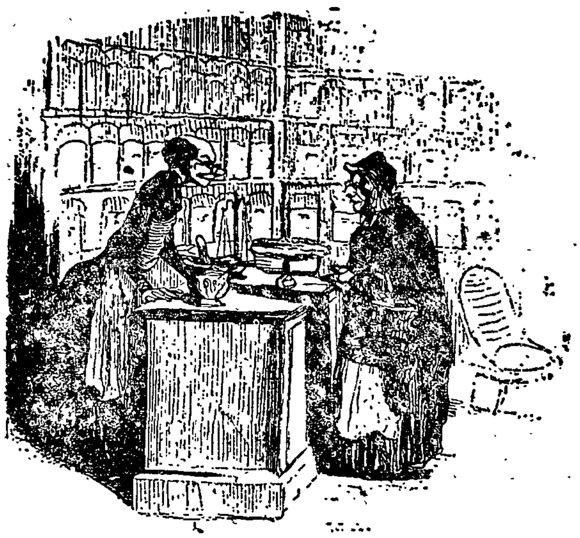
As grand summary to this pharmaceutical de bauch, a mixture of Raleigh's antidote containing substances ranging from pearl-

julep to amonia was forced down the throat of the dying King. And then the King died and sought the Peace of Heaven.

This custom prevailed even till about a century and half ago.[C] Apothecaries, shops in England used to prescribe dozens of drugs in their prescriptions ; they used to attend fairs and sell poisons and love philters as well as herbs. Daumier has done an etching which well illustrates the maliciousness of the apothecary who were either men of low class or retired prostitutes. This system of dispensing medicine continued till 1866 when the law was changed and apthecaries were made to get out of the medical scene once for all.

One of the favourite treatments of these quasi-medical persons was purging. The diet of the English people in the eighteenth century consisted of only meat without even a trace of vegetables. The result was that constipation was a very prevalant symptom especially among the lords and ladies of those times. Every fortnight they used to take a purge or an enema—a very regular and profitable part of an apothecary's business. In ninteenth century the belief in purging for purging's sake lost ground and physicians thought it was best to leave the intestine to do its duty undisturbed.

Coming to the modern science, medicine has freed itself from the shakles of superstition and religion. Curiosity, which once introduced all sorts of useless remedies into the pharmacopoeia has in the modern times been the origin of many wonder drugs. But sometimes man can never escape from his natural primal instincts. Physicians, instead of using Egyptian mummies or menstural blood as wonder drugs, are using the anti-biotics for every conceivable disease, thus helping the microbes to get resistant to the medicine. Even in our own hospital the case sheet of a child suffering from pneumonia showed the



"The Apothecary"
An etching by Dahmier.

use of all the anti-biotics the physicians could obtain ; the anti-biotics listed were—Penicillin, achromycine, Chloromyecetin, Aureomycin, Terramycine, Streptomycine and A.C.T.H !

The only difference between the drugs of Galen and the modern drugs is that the modern drugs is a very purified product enclosed in glass ampouls. The physicians and patients are the same at all times.

Reference :

1. "A history of medicine" by Gurthrie.

2. "Devils, Drugs, and Doctors" by Dr. Haggard.

Deft Definitions :

ALIMONY : Bounty on the Mutiny
VIRTUE : Insufficient Temptation—*G. B. Shaw.*
WIFE : A Former Sweetheart—*H. L. Menken.*

HISTORY OF PATHOLOGY

(A GENERAL OUTLINE)

By

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By "Pathology" we mean mans' concept of disease, his attempts to answer the fundemental question "What is Disease ?" Right down the ages from primitive man to the present times this answer has been a changing one. A preview of the growth and development of this changing concept of disease is the 'History of Pathology". Three broad periods with markedly differing conceptions on the nature of diseases could be easily recognised—the period of primitive medicine with its ideas of a supernatural origin of diseases ; the period following Greek Medicine with its Humeral Pathology ; and Modern Medicine with its Cellular Pathology.

Primitive man attributed all natural phenomena that was not clear to his simple mind to supernatural forces—to Gods and Demons ; everything good and pleasurable coming from the former and everything bad and painful caused by the latter. Thus man's earliest conception of disease centered round evil spirits who were supposed to visit or "possess" the patient during an attack. Even to-day this idea survives in various parts of the world in some form or other and several rituals are gone through to appease or "exercise" the possessing spirit.

The conception of disease as a natural phenomenon due to natural causes was a major development in the evolution of human thought. As far as our present knowledge goes this took place about 2500 years ago independently in many countries especially Egypt, India, Greece and China. That was a wonderful era of intellectual flowering. In every sphere of human activity master minds arose. In the field of medicine mention must be made of Hippocratus and Galen in Greece and Charaka and Sasruta in India. These pioneers noted and recorded the natural phenomena of diseases—its signs and symptoms with such meticulous accuracy and acute observation that some of them remain masterpieces even to-day. Thus the descriptive and diognostic aspects of medicine made tremendous progress. Trying various drugs and herbs and observing their effects on the progress of diseases they were able to gather a wonderful store of knowledge on drugs and modes of treatment. This new knowledge called forth a new interpretation of disease and a new Pathology was evolved. In Greece the "Humeral Pathology" took shape and the Indian system of Medicine developed its "Tridosha Pathology." The Humeral Pathology presupposes the existence of four humours—blood, phlegm, white bile and black bile—permeating and controlling various parts of the human system and keeping a perfect balance and equilibrium. So long as the balance was maintained, the person enjoyed perfect health. When the equilibrium was disturbed and the humours encroached on the province of one another, signs and symptoms of specific disorder or disease manifested themselves. This concept of disease was purely imaginary and could not be verified. It satisfied the mental curiosity but did not help in the progress or development of medicine. For about two thousand years the Humeral Pathology tied down Medical Science in a rigid framework giving little scope for expansion or change.

Incapable of verification, its truth and sanctity rested solely on the name and the authority of the great masters. Literally it became the dogma of medicine which few dared to question. Thus the science of medicine remained more or less static and stagnant right down to the 19th century.

The 19th century saw the dawn of a new era in medicine and the growth and development of Modern Cellular Pathology. Several factors contributed to the final over throw of the Humeral Pathology of Hippocratus and Galen. The structure of the human body was laid bare and a new science of anatomy sprung up—thanks to the brilliant pioneering work of master minds like Leonardo da Vinci, Servetus, Fallopius and Vesalius. Another landmark was the discovery of the circulation of blood by Harvey (1628) which opened up the new science of Phisiology. With the invention of the microscope by Leeuwenhock the minute cellular structure of the human body was first made visible to human eyes. Autopsy studies revealed the changes brought about in human organs in specific diseases. Mention must be made of the phenominal work of Morgagini (1761) "Seats and Causes of Diseases investigatad by Aanatomy" where clinical and pathological observations were correlated in about 700 cases. A new science of Bacteriology came to the fore front following the brilliant researches of Pasteur and the noble band of workers that followed him.

With this expanded knowledge of the structure and functions of the human body a new conception of Disease followed. The human body was made up of millions of living cells aggregated in organs and tissues each doing a specific type of work in complete harmony and co-operation with one another. Any injury or distruction of these living cells in any part of the body brought about a corresponding derangement of function and consequent disorder in the body as a whole resulting in DIS-EASE. Many of the injurious agents were found to be minute organisms whose presence, nature and mode of entry were brought to light by study and research in the science Bacteriology so that man was able to avoid them and protect himself.

The present progress of Pathology is to go beyond the living cells and take into consideration the forces and factors emanating from his "psyche" or personality and from environment. The concept of psychosomatic disorders is fast coming to the fore.

It is evident that Pathology is a growing changing Science and a correct Pathology—a true interpretation of Disease—is most essential to reap the fullest benefits of the Medical Science.

"HIGH on a ladder in the British Admiralty's war room stood a Wren (British Wave), sticking pins in a map which marked the progress of a North Atlantic convoy. A crusty British sea lord stalked in, glanced upward at the map, and said: "Captain, that Wren will either have to wear pants or we will have to move the convoy to the South Atlantic." —*Time.*

"A female knee is a Joint; Not an Entertainment."

—*Percy Hammond.*

FAMOUS NAMES IN ORIENTAL MEDICINE

(*Courtesy*: **Voltas Ltd**).

KOMARBHACHHA

(About 500 B.C.)

There lived in the days of the Buddha a man by the name of Komarbhachha, a great and wealthy medical practitioner whose fame had spread far and wide. He was well versed in Ayurveda ("the art and science of life") an ancient system of medicine which the Gods had revealed to mankind, so it is said, through the intermediary of a Rishi. Komarbhachha was familiar with the curative properties of many medicinal herbs and his intimate knowledge of Ayurveda enabled him to prescribe and administer specific remedies on a number of diseases. He was an experienced diagnostician employing diligent methods of examination and questioning of his patients.

HAKEEM SHARIF KHAN

(1725-1809)

Hakeem Mohammad Sharif Khan was a scion of distinguished physicians at the Moghul Court. A man of great erudition and experience, he was a pioneer practitioner of Unani Tib. He did extensive research and enriched Tib from his clinical experiences and from his study of the known systems of medicine. He was the first among the celebarated Hakeems who established a school to popularise the study of Tib which had been till then the preserve of a few families—knowledge being imparted from father to son.

Hakeem Sharif Khan wrote a number of books which gave impetus to Tib throughout the Sub-continent. His book "Ilajul Amraz" is the 'materia medica of Tib'.

Sharif Khan, an experienced diagnostician, revived Tib and established a long line of Hakeems at Delhi.

FAMOUS NAMES IN ORIENTAL MEDICINE—(Contd.)

BURZUYA A.D. 550

Burzuya was the physician of King Chosroes of Persia, the greatest of the Sassanid Shahs. A follower of the Nestorian school of medicine which was derived from the Greeks, he practised and taught at the medical university of Jund-e-Shapur wither the Nestorians had emigrated from Mesopotamia. His enlightened royal patron sent Burzuya on a study tour to the great centers of medicine in India from where he brought back with him Indian Physicians. There was forged in Jund-e-Shapur the link between the old teachings of Hippocrates—the Greek, and Charaka—the Indian, which became the ore of all medieval medical knowledge.

CHARAKA A.D. 150

Charaka was the court physician of King Kanishka and lived in his capital Purushapura or Peshawar in the second century A.D. His fame spread as far as China and he is credited with the authorship of the famous ancient medical treatise called "Charaka" which contains the basic principles of Ayurveda. The treatise itself is certainly hundreds of years older than Charaka of Peshawar, who possibly called himself after the ancient father of his profession.

In Charaka's time Takshasila (Taxila). Pataliputra (Patna) and Nalanda were great Universities and centers of medical research which attracted students from the Near and Far East.

THE MARCH OF MEDICINE

By

R. KRISHNASWAMY, B.A.

III Year.

"The longer you look back the further we look forward" said Sir Winston Churchill when adressing in March 1944 the Royal College of Physicians. History forms the basis of all knowledge and is a convenient avenue of approach to any subject of study. The recent modern discoveries and developments in medicine have thurst the early pioneer into oblivion and the respect accorded to the memory of those people is not adequate. The geographical march of medicine from Greece to Salerno and thence by way of Leyden to Britain and America was aided by epoch making discoveries of Harvey and Claude Bernard and by the heroism and determination of Pare, Hunter, and Lister. The lives and discoveries of those pioneers, is the main spring of inspiration from which medicine drew its energy to march forward and as Aguste Compte wrote, "The older the world grows, the more the living are indebted to the dead."

In the dim past, when the first generation of men lived in their mud huts, medicine was confused with magic and superstition. Medicine could not have been called the healing art, for the ideal of healing was not yet conceived. Man knew himself in a world of alien and frequently malicious forces; water that hated and therefore engulfed him; cold that made him wilful harm; rain that made his life a misery; and innumerable invisible Gods, ghosts and devils that plagued him with famine and pestilence. To gaurd him from those, man needed a mediator and that was the first medicine man, who with his magic might scare the ghosts and devils and with the correct ritual might appease the Gods.

The prehistoric medicine man diognosed and treated the diseases in his way. He traced the origin of diseases to the transgression of a taboo to the evil eye, or the entrance of a lost devil into the skull of a patient. To treat the diseases the primitive medicine man sometimes used magic, but "it is a mistake to think that the ancient medicine man was nothing but a sorcerer" (Kenneth Walker). He used also simple remedies of domestic order for the treatment of illness which he did not think grave enough for magic. To get rid of the devil that caused migraine and epilepsy he sometimes

Earliest known portrait of a doctor 2000 B.C
(From a painting in Pyraers.)

used to trephine the skull Numerous prehistoric skulls with trephine holes and stone implements used for those operation have been found—that the trephining was not per-

formed to raise the depressed facture is proved by the absence of any signs of injury in the neighbourhood of the hole.

The earliest portrait known of a medical man—was painted on the walls of the Les Trois Frives cave in pyrners, about seventeen thousand years ago. The man is shown wrapped up in the skin of some wild animal with legs and arms painted in stripes and with antlers of a stage.

While passing from the prehistoric to historic period, we come to the earliest civilization of Sumarians (3000 B.C.) and the Babylonian (2000 B.C.). Archelogists have come upon clay tablets of writing of Sumarians age, which reveal to us the reasonably high standard of medieval ethics prevalent in those times. Many copper knives have also been dug up and in all probability these were used by surgeons as scalpels,

Babylonian civilization replaced the Sumarian civilization about the year 2000 B.C. There is a pillar of hard stone of Babylonian age preserved in Louvere, on which is written a code of laws for the medical profession—about the professional works and fees. The medical profession was properly organised in those times especially because of Hammurabi (1948-1905 B.C.)—an extremely able Babylonian ruler. Herodotus the famous historian tells us that in Babylon every man was an amateur physician, and that it was customary to exhibit sick people in the street so that if passers-by happened to suffer from the same diseases, the people might recognise the exhibited illness and give useful advice and they were not allowed to pass-by a sick person in silence without enquiring the nature of the distemper.

The Rig Veda of ancient India (1500 B,C.) points out that the treatment of diseases at that time mainly consisted of spells and incantations. Charaka who lived at the begining of the Christian era, and Sushruta, about the 5th century A.D. mention about 760 medicinal plants and 100 surgical instruments. In those times equal importance was given to medicine and surgery and Sushruta says, "he who knows only one art is like a bird with one wing". The art of surgery was very much advanced in Ancient India. and Indians performed the operation of Rainoplasty for the first time. Ayurveda, another ancient book contains highly intelligent descriptions of the vascular system, and the information that plague occurs when many dead rats are found lying about and malaria is caused by mosquitoes. It gives a description of Pthisis, which is characterised by persistent cough, fever, and expectoration of blood.

In China, the first great name in medicine is RUHUTU (A.D. 115). He was a great surgeon and was accredited of having used psychological anesthesia for performing operations. He engaged his patients in a game of chess, and while they were thus engrossed, he used to complete his operation. He was also the first man to be associated with such operations as laporotomy and excision of spleen.

In Egypt the art of medicine was much highly developed than in other countries of ancient civilisations. It was here that the neolithic man raised himself above his kindred races in the mediterranean basin, and with the discovery of copper raised Man from the slough of stone age. At about the time of Ptolemy V and later Cleopatra, priests were also physicians, and charms and rituals were the only weapons of treatment. Their surgery was primitive, but their hygiene and public health orders were far superior to those found in Europe during the middle ages. Cleanliness of the dwellings, of the cities and persons were regulated by law and order and the priests set a splendid example in their frequent abulations, shaving of their entire bodies, and the spotless cleanliness of their dresses.

From East we move on to Greece—into a land whose thoughts made our thoughts and whose ways made our ways—to a land of men who first dared to look on nature with the clear eyes of mind. In the primitive man and in the great civilizations of Egypt and Babylon the physician evolved from the priest—in Greece he had dual origin, philosophy and religion. The Greeks aimed at eliminating the arbitrary element from view and knowledge of diseases, and depended on observations and facts which rejected hasty generalisations. The philosophers of Greece, from Anaximenus to Aristotle contributed a lot to medicine, by their spirit and outlook upon nature. The Greek conquerors were all patrons of science and they brought famous scientists from all over the world to Greece. In the temples of Aesculupius, the Greeks offered both phychic and physical treatments such as baths and excercises and prayers.

But we owe to Hippocratus—(born in the island of Cos in 460 B.C.) the whole of medicinal science that we follow today. Yet he was a very shadowy personality and we do not know much about him as about Plato or Aristotle. Hippocratus for the first time separated meicined from religion and relieved the Gods of the responsibility for diseases and placed it squarely upon the shoulders of men. The history of medicine from Hippocratus to the present time is the record of man's acceptance of the responsibility. Hippocratus laid down certain principles of science upon which modern medicine is built. The principles are in substance :—

1. There is no authority but facts.
2. Facts are obtained by observations.
3. Deductions are to be made only from facts.

He was also the first physician to differentiate diseases. He diagnosed and described Tuberculosis for the first time and prescribed open air treatment which is followed even today.

After Hippocratus Greek civilization deteriorated and the impetus given by Hippocratus declined with the civilisation. Physicians divided themselves into groups or schools with their own peculiar dogmas.

Three centuries after Hippocratus, Corinth was destroyed and Greek medicine migrated to Rome. There in the person of Galen who lived in the second century A.D. the medicine of Hippocratus was partly revived, but it was the last period of enlightenment for many centuries, Galen did not have the genius of Hippocratus or his intellectual honesty. He wrote voluminously on medical subejcts and gave plausible and erroneous explanations for every phenomenon of a disease. His only contribution to medicine was in the field of Pharmacology. Some of the drugs used are still used as "Galenical drugs".

Celsus in 30 A.D. was a famous surgeon. He was a man of an encyclopaedic mind and he wrote an immense book on philosophy military startegy, law and medicine. He was the first man to describe four signs of inflammation—rubor, calor, dolor, and tumour.

The downfall of Roman Empire and the gaining supremacy of Arabians deserve detail discussion with regard to the development of medicine. It is not an exaggeration to say that the reign of Arabians was the Golden age in the history of medicine. Their important contribution to the progress of medicine is in the field of pharmocology. The word "drug" is of Arabian origin. Arabians excelled in chemistry and alchemy and they were the pioneers in the art of crystallisation, sublimation and sterilisation. Avicenna—who was called the "Prince of physicians" after Hippocratus was a great physician of Alexandria. Avensoar—the first to discover Itchmite and Rhazeus who distinguished between measles and smallpox were the outstanding of the Arabian physicians.

With the decline of Arabian civilisatian we pass on to the darkest period in the history of

medicine. It was an age of scientific stagnation, medical decadence, negation of progress and prevalence of superstition. Diognosis of disease was based on the state of stars or the moods of saints. Science was static but alchemy was dynamic; and the Church played its part by imprisoning men's mind with shackles of rigid religious rules and morals. Diseases instead of being treated by medicines was attributed to the action of witches and Jews. Only one name of this age worth mentioning, is of Arnold of Vellanova. He experimented on drugs and found that the virtues of herbs could be extracted by alcohol. He was the first man to suggest that the wound caused by the bite of the mad dog should be enlarged and encouraged to bleed. Theodoni of Bologna used an anesthetic sponge impregnated with the Mandragora and Opium.

Burning Plague-Spreaders
(*From an old woodcut*)

The close of the thirteenth century was marked by the great epidemic called the Black Death. It took away a heavy toll of life and its devastation was so terrible that the Pope and the people thought that the Judgement Day had come. Death had become for the people, the apocalyptic rider on the pale horse spoken of in the Bible and each ecclesiastical authority had full liberty to specify the particular sin to which the plague could have been attributed. The plague was also attributed to the presence of Jews on Earth and so a lot of them were burnt on stakes.

The invention of printing, the discovery of America, and the sea-route to the East, not only did spread knowledge but also diseases. Syphilis was imported from America, nourished in Europe and was passed on to India. Nicholos Copernicus in 1543 revolutionised astronomy and Andreis Vesalius rendered a similar service to Anatomy. Leonardo da vinci, a few years before had drawn his famous drawings on human anatomy, he also demonstrated the presence of the ventricles of the brain by wax injections, which method is still followed by the anatomists all over the world. Andreas Vesalius discovered the existance of valves in veins and also the interventricular connections—thus leading the way for Harvey. Franco, a surgeon of those times was the first to perform a supra-pubital lithotomy, removing a large stone from the bladder.

By this time Columbus had brought Syphilis from America and Fracatorius became famous by naming it "Syphilis". When Charles VIII besieged Naples, his soldeirs got the disease from Italians and marketed it into Europe. For some time these ulcers were both a fashion and a terror among the nobility of France and other countries. Later the physicians accidently discovered that Mercury could relieve the symptoms of the disease; from that day onwords the patients had to suffer more from the mercurial vapours than the ravages of the disease.

In sixteenth century, William Harvey put forward a correct concept of the vascular system. He was associated to the court of King Charles who was interested in the Harvey's researches and allowed him to make observations on deer in his park. During the early part of the seventeenth century,

scientists tried to explain all processes of the human body in terms of physics and chemistry. But Thomas Sydenham advised the physicians to return to the methods of Hippocrates. He was a great admirer of Hippocrates and followed him in both principle and practice. He preferred simple remedies and was the first to prescribe iron for Anaemia and Quinine for Malaria. In the later part of the seventeenth century Von Lowenhock invented the first microscope. He was the first to see and describe bacteria and protozoa. Sartorius applied his skill to the service of Medicine by devising a number of instruments like the clinical thermometer and the weighing machine. During the early part of the eighteenth century medicine had gained and consolidated i s knowledge in the fields of physiology, Anatomy and Physical Chemistry. It was also a century of martyrdom for the people who tried to salvage medicine out of the depth of ignorance. John Hunter killed himself by a slow process syphylisation. He also introduced a new ligature operation for aneurysms. Leopald Aurenbrugger invented the method of percussion to ascertain the presence of fluid in the chest. Leannec found out the way to hear the sounds of the chest by constructing the first stethoscope, thus relieving the physicians of the embarassment of hearing the sounds in the lungs of buxom ladies.

The dawn of the nineteenth century was also the dawn of a new era for the medical science, in all its branches. Nursing not only got an ideal but also an inspiration in Florence Nightingale, who made nursing a quite fashionable and profitable job for the lazy victorian women. Guys Hospital of London produced three famous physicians and gave three familiar names for the medical world, *viz.*, Bright's Disease, Addison's Disease, and Hodgekins's Diseases after Richard Bright, Thomas Addison and Tomas Hodgekin. The later half of the nineteeth century and early part of twentieth century was the period of Pathologist and bacteriologist. Jenner and Lister, Koch and Pasteur contributed valuable information about the causes of many diseases. Their works were interreleted, one discovery starting a chain of discoveries. At the same time Metchnikoff wrote his famous thesis on phagocytosis and bacterial immunity. Virchow did valuable work on cellular pathology. In Germany Ehrlich discovered Salvarsan for the treatment of Syphilis. Lister discovered that clean hands will never carry diseases and produced antiseptics for the use of the surgeons while Humphery Davey, Doctor Simpson and Doctor Morton discovered the gases and methods for anaesthesia. This was the beginning of the modern surgery. In 1895, Professor Roengton accidentally discovered X-rays.

Medicine had reached its maturity by this time though lot of diseases still baffled the scientists. Twentieth Century produced answers to many of the questions in their minds. Best and Benting discovered Insulin. Murphy and Minot found the answers for perincious Anaemia. In 1929, Alexander Fleming found Pencilillium Notatum, a fungus growth in his cultures, which was fatal to the bacteria and in 1938 the purified form of Penicillin was produced, which started an array of anti-biotics that could cure almost all diseases.

The story of medicine is still being written ; it will never be complete so that we can write at the end, "This is the finish." Drugs, even antibiotics are becoming out-dated because of the resistance put up by the bacteria. In its history, the science of medicine had to fight with superstition and false sense of morals ; from our time onwards it has to begin its real fight—the fight against the bacteria and other causes of disease like insanitation and poor living conditions.

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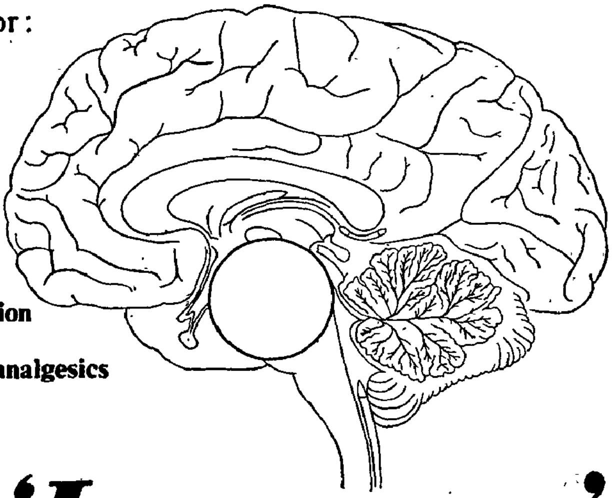

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Through the ages with Scalpel and Catgut

By

N. RAGHUNATH RAO,

Final Year.

Chiruregery the old term for surgery connotes the meaning of handiwork and this handiwork was meant to be directed to the treatment of the external wounds and diseases that afflicted the human frame. Surgery thus meant a system of medicine which tackled disease with direct measures and under direct vision. As the years rolled by, great and remarkable changes had taken place in surgery. Surgery is no more an art which deals with the external aspect of disease alone. A surgeon now does not always resort to his knife to deal with the diseases that he tackles. A surgeon these days has more patience and he amply and justly believes that conservative methods fetch great dividence in the treatment of diseases.

Apart from the changes in the outlook of the surgeon the position that he holds in society has also been exalted. Surgery was in those days of yore, the close preserve of the barber. Society looked upon the surgeon with disdainful eyes. It was a profession of the lowly placed in society, of those who were barred from high society for reasons of birth and upbringing. But today the very name of surgery is thrilling enough and is the coveted choice of many an ambitious lad. The flourish of the glitering knife, the immaculate white of the sugeon's dress the dignity of the surgeon's appearance, the confidence and hope that his face radiates, and the grandeur of the surgical paraphernalia impress the spectator and inspire the student. The threshold of the operation theatre heralds the ingress of the sickly patient into a brighter future of health free from the pest of disease.

Pain and disease accompanied life into the earth. But "One of the most valuable assets with which it has been endowed is its capacity to repair its own injuries and to overcome its illnesses, the healing power to which the name vis medicatrix natureae has been given. This indeed is the case with man. The primitive man had to match his brains and more so his brawn with the wild savagery of the jungle lords. Beasts were both his friends and his foes. He preyed on them and in turn was preyed upon. He warred with his fellows to decide the question of who should live first. In this long drawn out struggle of existence he was afflicted with injuries, was disabled by deformities and was plagued with disease. His instinct endowed him with an ingenuity which strived to heal his sufferings. He learned to remove the arrows which pierced his flesh, and searched for herbs and leaves which he learnt by experience would hasten the process of healing. His eagerness to garner more knowledge to his pool of experience taught him newer methods to tackle the problem of suffering. Thus looking back upon the vista of time, that man has taken to hustle his way through, one has to reasonably surmise that surgery was perhaps the oldest branch of the art of healing.

The saga of the early days of surgery is as interesting and romantic as any fabric that the human imagination has ever woven. Archaeological evidence goes to show that surgery was practised in the pre-historic age. They have unearthed bones showing evidence of tumours, osteoarthritic changes and gouty deposits. Many prehistoric skulls have been unearthed showing holes neatly trephined on them. It only shows that the surgeon of the prehistoric era had the necessary skill to undertake such an operation which even today is considered a major undertaking. The indications for such an operation can only be speculated. Many believe that the ope-

ration must have been performed to let out the demons which were considered to bring about diseases by hunting the individual's skull! It is thought that migrain and epilepsy must have been the indications for such an operation. They rule out the possibility of injuries from the list of indications because the skulls do not reveal any signs of injuries such as depressed fractures etc. To know that the pre-historic man was capable of performing an operation such as trephining takes one by surprise, for "the pre-historic man is conventionally considered as a brutish being, half man and half ape, armed with a stone axe with which he bludgeoned all his rivals".

Surgery in the pre-historic era was practised by the priests, who in addition were looked upon to protect and elevate the religious order of society. Surgery and medicine thus were intimately mingled with the religious faiths and superstitious beliefs that held sway. Even during the so called Middle Ages, religion had its say on the learning of medicine. If the people who practised surgery and medicine in those days were found to be abysmally ignorant of many things, especially about human anatomy it was because of the interfering attitude of the church in Europe. The church not only did disapprove surgical operation but actively thwarted all attempts to perform such operations. The Edict of Torus issued in 1163 made it known emphatically that the church "abhorred the shedding of blood (Ecclesia abhorret a sanguine." Two centuries later Pope Beniface VIII decreed that whoever attempted to procure parts of human anatomy for purposes of study would be placed under the ban of the church. This is one of the reasons why the study of surgery and anatomy came to be taken over by the ignoble, the barber, the executioner and people of that kind. But the hidebound views of the churches of those days had to yield later to the pressure of the progress of civilisation. The church then conceded the occasional dissection of the human body. But then, bodies were very hard to get. The bodies of executed criminals were caught hold of and to salve the qualm of conscience the church ordered a long and sardonic string of rituals and fomalities before the person was executed as if to atone for "indignities about to be inflicted on his body."

There are also evidences to show that the monarchy imposed strict regulations on the practice of surgery. Hammurbi (1948- 1905 B.C.) who was "an extremely able Babylonian ruler" has collected and recorded on a pillar of stone, now to be found at the Louvre, the regulations then imposed on medical practice. One of them reads "If the doctor shall treat a gentleman and shall open an abcess with a bronze knife and shall preserve the eye of the patient he shall recieve ten sheckels of silver. If the patient is a slave his master shall pay two sheckels of silver". The discouraging aspect of it goes to read "If the doctor shall open an abcess with a bronze knife and shall kill the patient or shall destroy the sight of the eye his hands shall be cut off". But if the patient happened to be a slave the doctor was required to replace the slave with a new slave. The stringency of these regulations and the ruthless nature of the punishment ordered, were too much of a deterrant to any mortal who practised surgery and this naturally hampered the free play of the surgeon's skill and the development of his experience.

The Rig Veda (1500 B.C.) and the Ayur Veda (700 B.C.) are two very valuable pieces of evidence that we now have, to bear testimony to the attainment of the Indians in the art of healing. They show that surgery was their forte and their system of surgical practice was highly advanced. Particular mention is to be made of the skill that the Indian surgeon had acquired in plastic surgery. They had ample chances to exercise their craft. It was then the practice of irate husbands to cut off the noses of their wives when they indulged in acts of infedality and this caused a hideous deformity of the face. The

surgeon brought down flaps from the forehead to cover the defects of the nose. But paradoxically the knowledge they had of human anatomy was very poor though they had made great strides in the art of surgery. Susruta, that renowned surgeon of A.D. 400 has described hundred surgical instruments which were used by him and his colleagues. It is said that Susruta used red ants in place of sutures. They were made to bite on the two sides of the line of suture and then their hind portion was cut off. Ingenious indeed!

The Greeks of the pre-Hippocratic or Homeric age acquired lot of surgical experience during the Trojan war. Mr. D.H. Frolich has painstakingly surveyed the injuries recorded by Homer in the Iliad. Out of a total 147 wounds that were mentioned 106 resulted from spear thrusts and 80% of those thus injured died. The total mortality rate was as high as 77.6%. The results of treatment, if Homer's recounting has any true bearing on facts, were poor. Though Hippocrates and his contempo raries have made signal contributions to the art of healing their knowledge of anatomy was poor and so significant advances towards the perfection of the practice of surgery was not forthcoming. They even failed to make distinction between nerves, tendons and ligaments but grouped them under the muscular system. But by assertively pointing out that the origin of diseases lay in physical causes and not in supernatural explanations. Hippocratic medicine threw the beacon light which cleared much of the darkness in the mind of men. From now on surgery and medicine could hope for better opportunities for their growth.

The later half of the middle ages from 1096 to 1438 saw great changes in the precept and practice of surgery, though the church, the blind belief in the occult and supernatural forces, and the ignorance of the masses retarded progress. There were surgeons of repute like Guy de Chauliac who lived in the later part of this age. Women were also admitted to the medical school at Salerno. They performed major surgical operations. But men have been almost caustic in their remarks and comments about these women. Guy de Chauliac writes in his "Grand Chirurgie," about them where he ranks them as the fifth and the lowest class of operator. Sentimental reasons, it is alleged, drove those surgeons to resign promptly to the Devine will in cases of failure and this attitude of the surgeons must have been more than disconcerting to the nervous patient.

The medical schools at Palermo, Montpelliar, Bologna and Padua produced physicians and surgeons of great learning. Guy de Chauliac who studied at Montpellier was a great physician and surgeon. He made many inventions. He introduced the practice of applying extension to the factured limb by means of weights and pulleys. He was the first to describe the Trendelenberg position in

Amputation of a limb in 17th century.

surgery. He also invented the chains and handles by means of which patients could raise themselves into the sitting position.

During the Renaissance (1500-1700) advances were made in all the fields of science and medicine. Galen and Leonardo da Vinci kindled interest in the study of Anatomy. Ambrose Pare's discoveries and observations during this period have been an important milestone in the growth of surgery. His contributions have a special bearing to the surgery of wounds. He devised a number of surgical instruments including the artery forceps and from his imaginations were born the artificial limbs. He taught that bleeding after amputation is to be stopped by ligating the bleeding points. He found that efficient treatment of gun-shot wounds lay in their being treated with scalding oil to remove the effects of their essential poison. Ambrose Pare realised that surgery could be learnt only by the eyes and the hands and not from the leaves of voluminous books. His work becomes all the more laudable when we remember that he lived during stormy days and the opportunities that he had, to make himself known, were scarce in those days of political upheaval. He belonged to the pedigree of barber surgeons.

The medical practitioners in those days were grouped into three classes, namely the barber surgeon, the physician and the apothecary. The barber surgeons occupied a rung below that of the physcian. He was considered no better than the renegades or vagabonds, shaemless in countenance, lewd in disposition, brutish in judgement and understanding. The barber surgeon attracted his patients by turning up at fairs and shouting his qualifications and mastery to the passing crowds. They were mainly cataract gougers, lithotomists and tooth surgeons. After the Renaissance, legislations were passed in England and Paris to raise the status of the barber surgeon. In Paris during 1505 the Paris faculty accepted the barber surgeon into its flock while in England (1540) the barber company and the Guild of surgeons united to form the Barber Surgeon Company. Thomas Vicary, the anatomist, was its first president. When a barber surgeon by name Felix of Paris relieved Louis XIV of a very painful malady, he earned, in addition to the royal fervour and acclaim, increased recognition and royal support to the barber surgeons. He was followed by equally brilliant men who added further links to a long chain of names. Finally despite the jealousies of the physicians who maliciously placed big hurdles in the course of their progress, the barber surgeons secured five chairs for surgery at St Come—the ancient college of barber surgeons. This period of good luck found its zenith in 1731 when the Academy of Surgery was formed at Paris.

The obstacles that hampered the progress and whittled down the efficacy of the surgeon's healing hand up to this time were many. Among these the ones that ranked in the front were his ignorance of anatomy, his inability to stop haemorrhage, his helplessness against infection and his limitations in the relief of pain during and after the operation.

The dissections by Vesalius heralded the start of the scientific study of anatomy and this advanced to great lengths during the Renaissance. It is small wonder then that the surgeon could perfect his technique to a remarkable degree during this period and this gave surgery new meaning and value as an effective method of fight against the many ills that haunted mankind.

Though even as early as 1080 Roger, Professor of Surgery at Salerno stopped bleeding by means of cautery, this was not a satisfactory and reliable method in those days when the danger of sepsis was dreadful. Ambrose Pare's method of ligating the bleeding vessels and the modification of his artery forceps by Spencer Wells helped to clear the dangers from haemorrhage.

That blood could be transfused to human beings was an important discovery which gave new hope to the surgeon during this period.

The first man to carry out a successful transfusion on an animal was Richard Lower of Exford. Dr. Jean Denys of Montpellier transfused successfully eight ounces of blood from a lamb to a boy with good results. But it was Dr. Blundell and Henry Cline of London who carried out in 1818 the first successful transfusion on a boy, with human blood. After this event, epoch making as it was, many new facts have been gathered regarding blood transfusion such as the blood groups by Landsteiner and all of these have helped to make blood transfusion safe and surgery safer.

The question of making operations painless was a real problem for the surgeon for a long time. Even great surgeons like John Hunter "turned pale as death" when they took their knives in their hands because they could only sympathise with the patient's agony. To control the patient's struggle and to carry out the operation with the patient resisting forcibly against it, meant great strain for any surgeon. The surgeon mainly depended upon speed as a way out of his difficulty. It is said that some surgeons performed the operation of lithotomy in less than a minute. But the good work of Morton with his discovery of ether as an anaesthetic and of Simpson with that of chloroform inspired many others who have followed them with the result that Aneasthesia is in itself a big science to-day. The aneasthetist is an inseperable friend of the modern surgeon.

If surgery advanced as a subject with great steps during this period there is nothing to wonder about it. The invention of microscope by Leeuwenhoek and later the discovery of the bacterial origin of diseases by the inimitable Pasteur, the practical application of the conception of immunisation and other manifold advances that took place during this period in all the other studies allied to medicine provided surgery with the pabulam for its rapid growth. The discoveries of the x-rays by Wilhelm Konard Von Rontgen and radium by the Curies gave the surgeons the opportunity and courage to discover new methods of healing diseases.

Antiseptics, aseptic methods, antibiotics and chemotherapeutic drugs have removed from surgery the hazards of infection. Lister used carbolic acid during his operations to kill the germs which interfered with the healing of wounds and threatened the life of the patient. His contemporary Robert Lawson Tait believed that antiseptics, sterilised instruments, operating in clean hygienic surroundings etc. could be depended upon fully to keep away the dangers of infection. But these methods still used carbolic acid in the process of the refined cleanliness though its use during the operations were given up. All these endeavours to eradicate sepsis were crowned with the discovery of the sulphonamides and the antiboitics. Since it is imposible to dilate upon their uses it will suffice to say that these drugs brought down the mortality rate in post operative cases to unbelievably low level.

The Mayo brothers, William Stewart Halstead and Lord Moyniham of Leeds were among the many who gave shape to modern surgery. It was Halstead who popularised the use of rubber gloves during surgical operation. It was also left to Halstead to impress upon the profession the need to avoid the fetish of speed during operations which was a hangover from the pre-anaesthetic days when "slickness in getting the half drunken patient out of the operating room was more vital than the finish."

Till these surgeons appeared on the horizon of surgery, surgery was considered the last resort of treatment. Surgery meant danger and the help of the surgeon was sought only when everything else had failed. But the successes that these surgeons achieved created great confidence in the minds of the people.

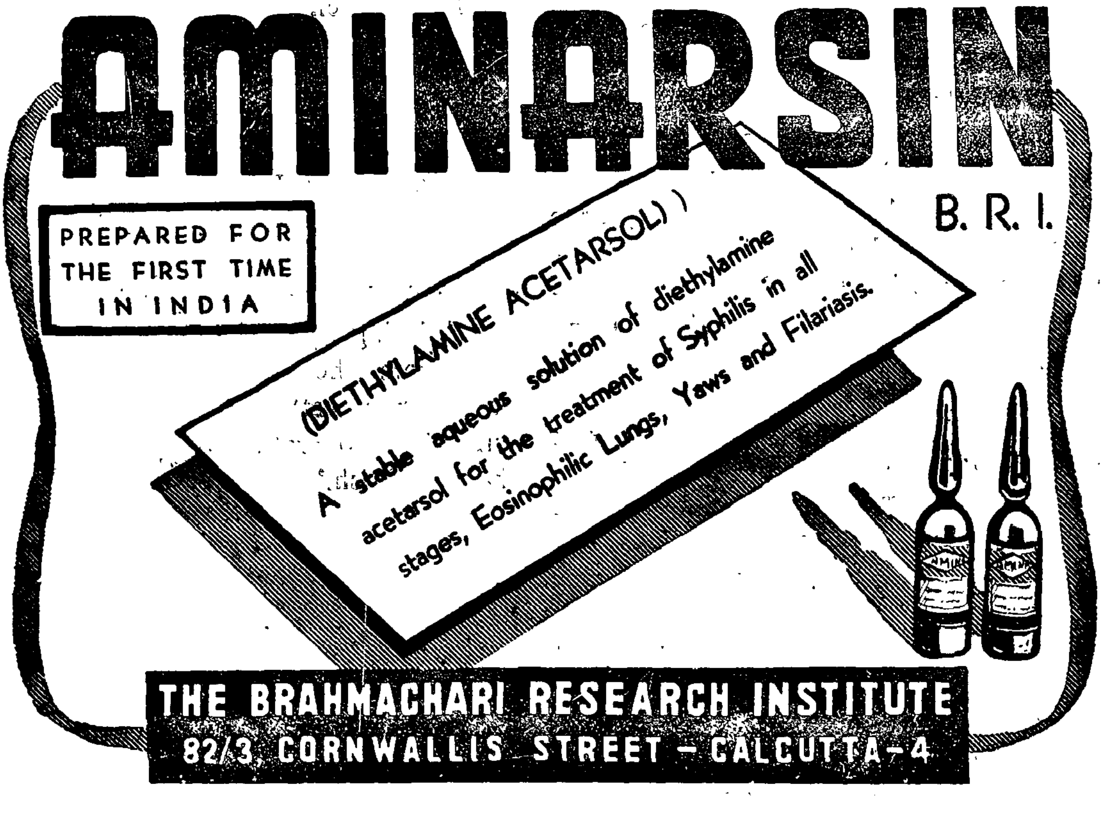
Now, the methods of diagnosis have improved and the techniques of the operations have radically changed. Many new instruments like the gastroscope, the sigmoidoscope, the cystoscope, and many new procedures like ventriculography and angiography have boosted up the possibilities of correct diagnosis. Many new specialities have grown out of the mother science like genito-urinary surgery, surgery of E.N.T. etc.

The modern surgeon can diagnose and treat diseases better than those who went before him. His hand is more sure and powerful in its fight against the havocs wrought by diseases than of his predecessors. The modern surgeon does not have to depend on his knife alone to treat diseases. Conservative methods of treatment have found an important place with him. The advances in radiotherapy and physiotherapy and the very reliable methods and instrument that he has in his repertoire of diognostic aids have bolstered up his changed outlook.

All the social stigma that was once attached to the surgeon's name has vanished. Modern surgery is a boon to the mankind, but there are still many conditions of the body that cannot be cured even by scalpel and scissors. Progress in the surgical treatment of heart conditions, mental diseases and malignant tumours have to be kept up, to free man from the terror of diseases.

STOP SIGN: "Always drive so that your license expires before you do"

—(*English Digest*)



HISTORY OF ANAESTHESIA

By

DR. V. SUBBURAMAN, B.A., M.B.,B.S., D.A., (Lond.)

Chief anaesthetist and Lecturer in Anaesthesia.

It was as late as in 1840, that Sir Benjamin Brodie remarked, that some means to render operation painless was among the greatest needs of mankind. He feared that it was a vain wish and would never be accomplished. Till 1840's few operations were attempted, except those that could be done in a jiffy. "He is a clever operator, is Walpole, but he is only one of your chloroform surgeons. In my early days, you made your man drunk and the porters and students held him down and you had to set your teeth and finish the job fast" remarks the old doctor in Shaw's "Doctor's Dilemma".

The ablest surgeon in the preanaesthetic days, was the fastest operator, the time of the procedure being limited by the patient's fortitude-physical and emotional. So that Sir Clifford Allbutt says, "Surgeons operating on the quick were pitted one against the other like runners on the line. He was the best surgeon both for the patient and the onlooker who broke the 3 minutes record in an amputition or a lithotomy."

Charles Darwin was prevented from becoming a doctor by the horrors of these procedure.

Dupuytren deliberately made insulting remarks to a lady that she fainted and in that condition he operated on her.

Though surgical operations like trephining were known to Egyptians, Hindus and Arabic physicians, Anaesthesia as it is understood today was unknown. The earliest recorded attempts to alleviate pain are from Babylon, in 3rd millineum B.C. Soporafics, Intoxicants and herbs were used to dull pain, fortified by physical violence, as nailing down the patient, or making him unconscious by a blow on the head etc., Pliny, the celeberated naturalist mentions of Egyptians using 'Memphitis' which when powdered with vinegar and applied aneasthetised the tissues to such an extent that they could be cut or cauterised. Both Hindu and Arabic physicians used opium and intoxicants as alcohol to alleviate pain. The aneasthetic properties of physical agents were known. Baron Larrey, Napoleon's Surgeon-General noted that amputations of forzen limbs were painless. Anton Mesmer and his followers used 'Mesmerism' or Hipnotic Sleep. But all these methods were unreliable.

Modern Anaesthesia is a little more than hundred years old. In 1800 Sir Humphrey Davy noted the analgesic properties of Nitrous oxide. Henry Hickman in 1828 was operating on small animals anaesthetised or rather asphyxiated by Carbon Di-Oxide. Ether and nitrous oxide inhalations were popular among medical students and magicians, probably due to their slight euphoric

effects; and in these frolics and parties observers noted that the participants did not notice the pain of minor injuries. In 1842 Crawford Long, a recently qualified doctor, used Ether and removed a cervical tumour but he did not publish his achievement in any scientific journal. Horace Wells a dentist used N_2O on himself and for a number of dental extractions but failed badly at a demonstration in Massachusetts General Hospital before doctors and medical students; unfortunately the patient was a tough alcoholic notoriously resistant to anaesthetics. So that the credit of first successful recorded anaesthetic administration goes to Thomas Green Morton who successfully administered Ether with an inhaler at a demonstration before the surgeons and medical students at Massachussetts General Hospital when Dr. J. C. Warren removed a cervical tumour. The result was so astounding that Warren exclaimed "Gentlemen, this is no humbug." Soon the news spread to England and Liston carrying out an amputation of the leg under Ether exclaimed "This Yankee dodge beats mesmerism hollow." Oliver Wendell Holmes introduced the word 'Anaesthesia'.

Ether was now being used not only in surgery but in dentistry and obstetrics. Sir James Young Simpson, Professor of Midwifery, Edinburgh was interested in the relief of pain during child-birth and was using Ether. The irritant properties, the troubled induction and the odour of Ether prompted the search for other agents and Sir James Simpson after experimenting with chloroform on himself and his assistants introduced chloroform in 1847 to mitigate the pains of labour. Ether for a time receded to the background. The rather pleasant smell, the non-irritating vapour and quick induction made chloroform a favourite and John Snow in England, the earliest to practice anaesthesia as a speciality, extensively used it. Simpson had to fight bard to win public support and overcome religious objection to the use of anaesthetics in labour-based as they were on the words in the Bible "In sorrow thou shalt bring forth children". In an outstanding article "Answers to Religious objections against employment of Anaesthetics agents in Midwifery" commenting on the words in Genesis "The Lord caused a deep sleep to fall upon Adem and he slept and he took one of his ribs and closed up the flesh," Simpson wrote 'In this remarkable verse the whole process of a surgical operation is briefly described, but the passage is principally striking as affording proof of the creator himself using means of saving a poor human from unnecessary endurance of physical pain'.

Soon the dangers of chloroform were beginning to be realised, after a number of fatalities following Chloroform administration were reported. A commission was set up by the Royal Medical and Chirurgical Society to investigate the cause of death. They could not come to a decison and suggested A.C.E. (Alcohol, Chloroform, Ether) mixtures. John Snow was the first to realise that death was due to sudden heart failure and Ether once again came on the scene.

It was at this period that Colton reintroduced N_2O, still the safest and least-toxic anaesthetic provided. Joseph Clover, successor to John Snow, as an anaesthetist specialist, pointed out that Ether is safer and popularised gas and ether sequence. He invented a percentage chloroform inhaler as well as an Ether inhaler. Sir Frederic Hewitt invented a portable gas Ether apparatus and in America McKesson developed the intermittent flow gas machine.

In 1884 Koller noted the surface anaesthetic properties of cocaine on cornea' and in 1885, Halstead demonstrated Nerve block injecting the Mandibular nerve with Cocaine. In 1887 Carl Ludwig Schleich before the Congress of German Surgeons in Berlin reported on his experiments with infiltration using again Cocaine. Local anaesthesia gained acceptance. With the use of Adrenaline by Braun with local anaesthetics, to prolong the inten-

sity and duration of anaesthesia and the introduction of Procaine (Novocaine) by Einhorn, it was realised that the Mikulitz observation "Any kind of anaesthesia is dangerous" is not true, at least not always. Soon Nupercaine, Pontocine or Arethocaine were introduced and Lignocaine (Xylocaine) is a more recent and popular local anaesthetic.

The unpleasant induction with Ether by inhalation prompted the search for other routes of administration and Pirag of used Rectal Ether and was improved by Gwathmey with Rectal Ether-Oil mixture as a Basal Narcotic. Soon it was replaced by paraldehyde and this by Avertin with Paraldehyde subsequently (Tribromethylalcohol) with as a basal narcotic held the field for a long time till the introduction of I.V. barbiturates.

The I.V. route was used by Ore using Chloral hydrate. Ether and Chloroform were tried with serious results. Emil Fischer and Von Mering introduced Barbiturates with Veronal or Barbital but no control of anaesthesia was possible because of their slow excretion. The introduction by Weese of Eirpon paved the way for modern I.V. anaesthesia. Lundy with Theopentone is responsible for the modern practice of using pentathol as a routine pleasant induction agent.

The work with the local anaesthetic was extended and resulted in the introduction of spinal Anaesthesia. Quincke introduced lumbar puncture and Bier and Tuffier developed Spinal anaesthesia. Corning suggested Extradural (Epidural) block and soon other procedures as paravertebral block and sacral block were followed. Kappis described splanchnic block. The spinals were greatly popular because of the profound relaxation, the contracted bowels and limited respiratory movement which followed spinal was very welcome, as also the fact the demonstration needed less skill. Cocaine, later Stovocaine and Novocaine were popular till Nupercaine came into the field. The sequele like headache and neurological complications following spinals were beginning to be realised and with the introduction of muscular relaxants its popularity has waned.

A milestone in the history of Anaesthesia is the development of Endotracheal anaesthesia. The dangers of aspiration of blood, mucus and other material into the air passages during operations on the mouth, nose and larynx were realised early and an endotracheal tube prevented these dangers and also afforded the surgeon more room to work without the prospect of anaesthetist being in the way; besides this method provided a more satisfactory way of maintaining a free airway and helped secretions from bronchi to be aspirated. Trendelenberg used cuffed tubes through a tracheotomy wound and administered anaesthetic vapour through it. Macuven introduced metal tubes orally by digital palpation. The introduction of Laryngoscope made these procedures easier and less unpleasant to the patient. Kuhn used it extensively and Meltzer and Auer showed that the rhythmical insufflation of lungs with air will maintain oxygenation in an apnoeic patient. It was due to the work of Rowbotham and Magill at the plastic surgery unit at Sidcup during World War I that the modern method of using a wide bore tube with to and fro breathing was established and is of great help in artificial ventilation of lungs. An inflatable cuff over the tube to afford air tight fit and no leaks around the tube and further safe-guarding the air passages from aspiration is a further development. Other types of tubes as flexible unkinkable ones, endobronchial tubes for one lung anaesthesia and bronchial blocks,—cuffed balloon suction catheters—are all related developments.

A major advance in Anaesthesia was the introduction of closed circuit Rebreathing with CO_2 absorption, by Waters of Wisconsin. The underlying principle being that expired anaesthetic mixture can be breathed over and

over again provided the exhaled Co2 is absorbed or removed and the oxygen consumed by the body replaced. This method provides a most satisfactory way of artificial ventilation of lungs. It provides for smoother anaesthesia with plenty of O_2, great economy in the use of gases, and conservation of water vapour. With the help of relaxants these provide the most satisfactory method to combat the problems of open chest. Cyclopropanes, a powerful, pleasant and rapidly acting anaesthetic, permitting use of large percentage of Oxygen, was extensively used till the muscle relaxants came into the field.

A new era in the history of surgery was ushered in with the introduction of Curare into anaesthetic practice by Griffith and Johnson of America in 1942 and by Gray and Halton of England. The arrow poison of the Red Indian was known to history for many centuries but with the isolation of the alkaloid d-Tubocurarine, and its use, gone are the days of deep depression anaesthesia by toxic agents like Chloroform and Ether. The principal action of Curare is to produce paralysis by Neuromuscular block of striped muscle and this is achieved by I V. injection immediately. With Ether and Chloroform relaxation is obtained only at deep levels of anaesthesia with invariable accompanying damage to vital organs as kidneys, liver, and great metablic upset. A price so to say has to be paid for the relaxation. But with relaxants, relaxation is easily obtained with little or no effects on other organs and anaesthesia can be maintained at a very light level. It paved the way for modern conception of Anaesthesia as forming a triad with three components - hypnosis secured by Thiopentone Analgesia by N_2O and Pethedine, if necessary, and relaxation by relaxants. Each component can be varied without necessarily affecting the others. The combination of light anaesthesia and relaxant resulted in a patient recovering his reflexes soon after operation with few post-operative complications. The closed circuit anaesthesia with the relaxants facilitate controlled Respiration and overcomes the problems of a open-thorax and is responsible for the development of Thoracic Surgery. Flaxedil is a synthetic drug (Gallamine Tri EThiIodide) has a shorter action and succinylcholine is an ultra short acting relaxant used in Endotracheal intubation, Electroconvulsive therapy and short orthopaedic manipulation is a later introduction.

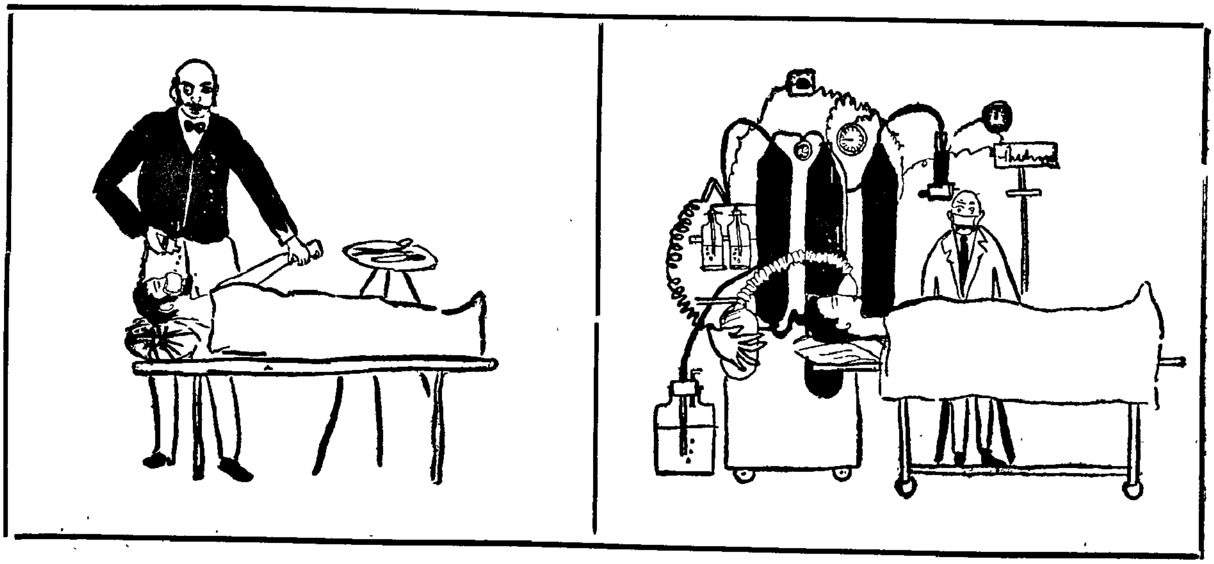
Bleeding, besides contributing to the shock of the patient can be a hindrance to the surgeon and may well make the operation impossible as in the removal of vascular meningioma etc. Consequent to the revised concepts of circulation it is not always necessary to keep the Blood Pressure as near the normal as possible If the important proviso that there should be arteriolar dilation and ample oxygenation is satisfied, a systolic pressure of 60-70 is sufficienty to carry the capilary circulation in vital organs. Based on this principle delebe-rate attempts are being made to lower the B.P. either by means of Total spinal (Splantine Block) or using as introduced by Gillies, Ganglion blocking agents as Methonum Thiophanum compounds as Arbonad. The method is a physiological trespass and corony, renal, cerebral thrombosis are the disadvantageous sequele tensive techniques have a limited field of use and definite indications ans is employed where the advantages overweigh the disadvantages.

Anaesthetic properties of chilled tissues were known from the days of Hunter and cooled tissues have a very low basal metabloic rate and low oxygen consumption and because of this lowered oxygen consnmption a chilled tissue can withstand better the effects of anoxia. This principle is used in the surgery of congenital cyanotic heart, as Fallot's Tetralogy, and other major vascular surgery wherein lowered oxygen demands offer a greater chance of success. Hipothermia is effected either by surface cooling or by reinfusion of cooled blood with Chlorpromizine derivative

facilitating its production. Because of danger of cardiac arrest it is used in selected cases.

The introduction of chlorpromazine and derivatives in anaesthesia form yet another step in the development based on the concept that autonomic responses to stress as shock, trauma etc. the protective responses of the body may be some time so servere as to be detrimental to the safety of the organism itself. The drugs especially Chlorpromazine by controlled inhibition of autonomic responses affords protection to the organism in shock and related states. This autonomic blockade, Hibernalin in association with Hipothermia is used in certain traumatic surgical conditions and procedures as popularised by Lobritt and Huegenara.

"The anaesthesiologist of today is often less concerned with the administration of an anaesthetic itself than with numerous other problems presented by the patient, as maintaining the patient's general well being, neutralize the immediate after affects of operation and sharing the responsibility in assisting the operative•risk and patient's reserve in the light of clinical examination." Routine clinical examination is not enough and he requires improved diagnostic methods and technical aid. Among them may be mentioned mechanical respirators to relieve the monotomy of squeezing the rebreathing bag, the Oximeter giving the Oxy. saturation of Hb, apparatus for measuring continuous CO_2 concentration of exhaled air, a visible direct reading of E.C.G. to assess the circulation etc.—so that in the Anaesthaliologist of today with multiple functions and surrounded by newest gadgets, is no longer recognisible the anaesthetist of yesterday with the rag and bottle.



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—*Woodrow Wilson.*

* * *

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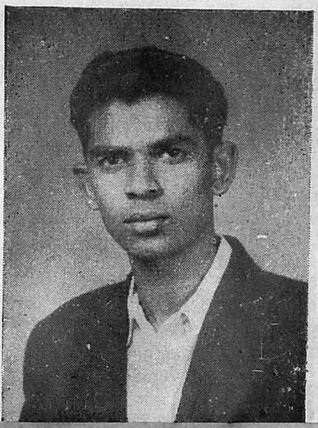
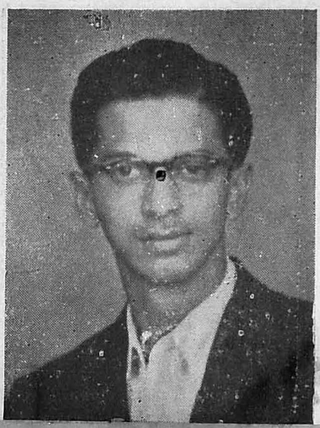
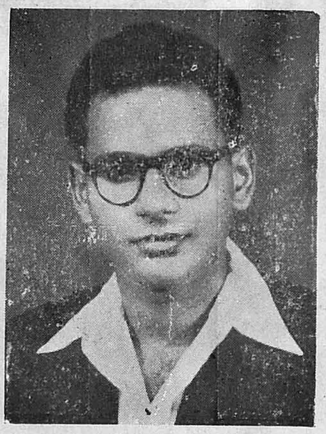


V. K. SIVAPRAKASAM,
Tennis (Men)
...five feet of ooncentrated noise...



BENJAMIN F. PINTO,
Cricket,
...bowling with six-appeal...

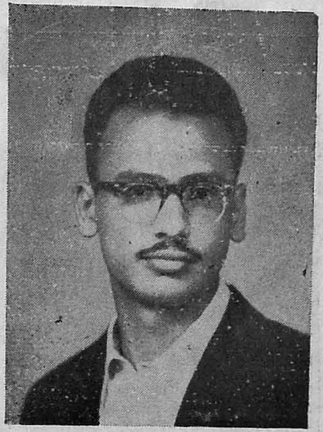
MISS. S. JAYALAKSHMI,
Tennikoit, (women)
...prominence is so embarrassing...



V. K. JAGDISHCHANDRAN,
Football,
...Bull in a china shop...

MISS. N. VILASINI,
Tennis (women)
...rock around the clock...

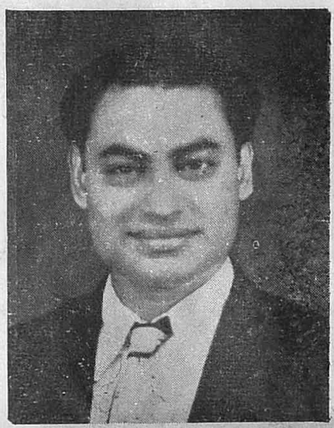
N. M. ABDUL JABBAR,
Badminton (Men)
...always on the toes...



T. V. A. JAFFAR,
Volleyball,
...a Farouk of the game...

THE CAPTAINS

Miss. Katija Begum
Net-ball
...taking everything in the stride...

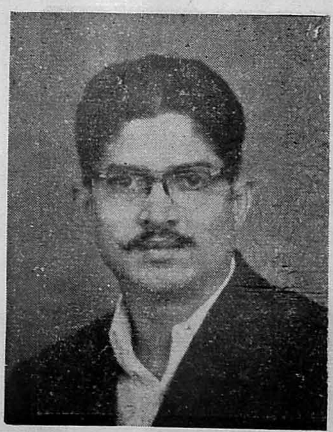


V. Subburengan
Gymnasium
...brawny and harmless...

P. Muthu
Basket ball
...in trouble to be troubled is to have the trouble doubled...

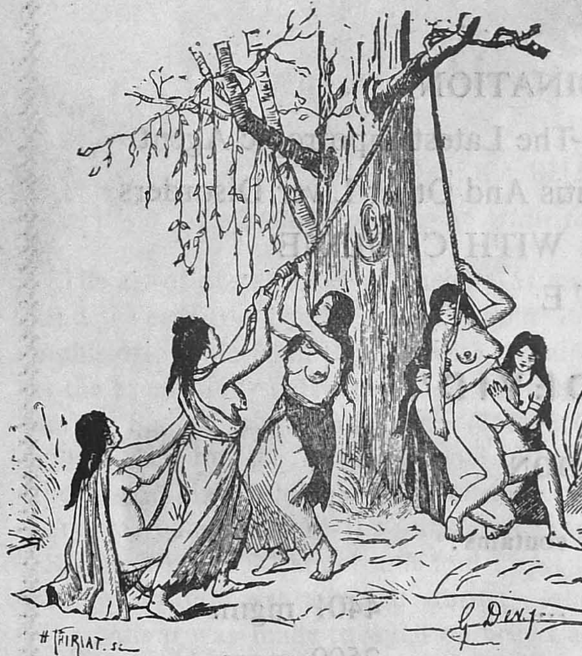
Miss. K. Subbalakshmi
Throw ball
...by and by she caught the college's eye...

Miss. S. Panchanadam
Badminton, (women),
...tongue is the sharpest of blunt weapons...



M. Mohit Chirodian
Boxing,
...In the way of flesh and blood...

PRACTICE OF MIDWIFERY



Induction of Labour among American Indians.

Greek method of hastening labour during the time of Hippocrates. The upturned couch with the woman tied up was pounded against a bundle of faggots.

A variation of the Greek method practised in Rome. The woman was repeatedly lifted and dropped on a couch.

Delivery in the 17th century.
(*from a woodcut by Samuel Janson, 1681*)
Only in the 17th century doctors were allowed to participate in normal cases of delivery. Often, they were forced to carry out their manipulations under a sheet, to spare the blushes of the patient.

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Vitamin B 12	...	20 mcg.
Inositol	...	50 mgm.

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Normal and Abnormal Labor in Ancient India

By

DR. K. BHASKER RAO, M.D.,

Assistant Professor of Midwifery, Stanley Medical College, Madras.

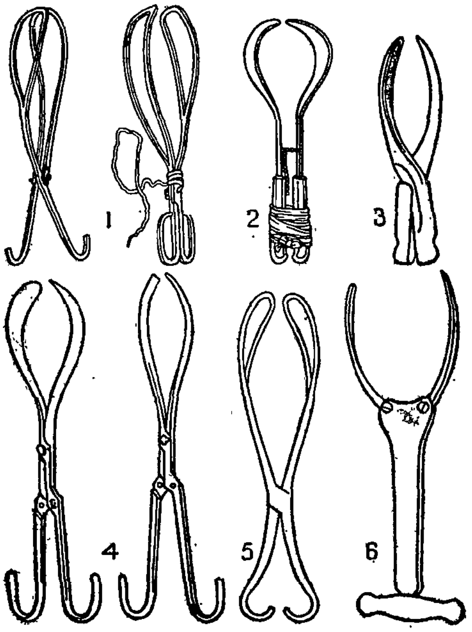
The art of obstetrics is as ancient as mankind. Very little can be guessed about it in prehistoric India from the material obtained at the excavations at Harappa and Mohenzodaro. But in the Vedic times (2500 B.C.-1500 B.C.), in the dim mists of antiquity, there is a clue available—that normal delivery was conducted in the dorsal position. (Rig Veda) In Mesopotomia and Egypt the sitting posture was adopted during labor. The patient was made to squat on bricks and was supported by a person from behind and another person would help out the baby in front between the bricks.

But in the Samhita era (1500 B.C.-100 A.D.) there is plenty of evidence available in the works of Susruta and Charaka that the physicians of those days were conversant with a good deal of midwifery : antenatal care, the development of the foetus haemorrhages of early and late pregnancy, management of normal and abnormal labor and the puerperium are given in detail. In this brief paper, I am restricting myself to only the conduct of normal labor and how the ancient Hindus overcame the obstetric difficulties. Susruta deals with normal pregnancy and labor in 'Sarirasthana" of his commentary and about operative obstetrics in "Chiketsa Stham" whereas, Charaka explains mainly the intranatal care and management In his voluminous work. The latter was royal physician to King Kaniska and attended at the difficult delivery of the Queen.

Both these authorities considered that the foetus normally presents by the cephalic pole in the lower part of the uterus and delivery may take place between 9th to 11th month (prematurity and post maturity?) after conception. From 9th month itself, the pregnant woman had to be shifted into a delivery room ("Suthikagriha') a neatly kept room about 12 feet x 6 feet built over an elevated place facing south or east. The walls of the room should be well plastered and all the requisities were to be got ready and kept handy—2 sharp needles of gold and silver, linen thread, sharp instruments of steel, 2 wooden cots and wood for easily lighting the fire. False pains have been described and they mentioned that true pains are accompanied by mucoid vaginal discharge. At the onset of labor, she is given a bath with warm water and fed with gruel. Charaka advised the patient to walk about in the early stages of labor or to lie down on a soft bed. Later, she lies down on a wooden cot in dorsal position with the legs slightly flexed. The attendants—four elderly ladies skilled in the art of delivery and known to the patient—will have their finger-nails pared before conducting the delivery. She should be told to "strain only when there are pains and that if she should strain in the absence of pains, it would be worthless and may even harm the child." (I do not think that in those good old days abnormal uterine action was as much a formidable problem as it is to-day). When the child is born, its throat is cleared of mucus by means of a finger with cotton wrapped round it; and a little ghee mixed with salt is given to it—probably so that it may vomit and mucus or liquor amnii! The cord is cut about 8 fingers from the umbilicus in between 2 knots with a sharp knife made of gold, silver or iron with its edge turned upwards." In the third stage of labor, there is no cord traction done but the patient is encouraged to strain or cough. Her throat is tickled with a braid of hair. If the placenta is

retained bimanuel compression of the lower abdomen, loin compression by heels of that attendants, vaginal fumigation and enemate to force'' out of the placenta are the "conservative" methods described. If these fail, manual removal of the placenta with a hand (from which the nails are trimmed) smeared over with butter is advised. Postpartem haemorrhage is not mentioned as such but elsewhere it is mentioned that a person who has lost blood should be given blood of an animal orally.

Obstructed labor ("Midhagarbha") and extraction of the foetus in such cases has been acknowledged by Susruta as the most difficult of all surgical operations and he cautions that the permission of the king be taken as a routine prior to performing it. The aim of the obstetrician then he says should be to save the mother. According to him obstructed delivery may be met with in 3 types of cases (a) Cephatic presentations, (b) shoulder presentations or (c) in breech — hips being jammed in the passages (impacted breech). Turning (vertion) to convert an abnormal presentaion ("Pratiloma") to normal presentation ("Anuloma") is described. In delayed labor casess, first fumigation of the vagina is done and prayers are offered. The patient is given some wine to diminish the pain. The physician skilled in this art then introduces his hand into the vagina and uterus. After all Susruta though clever in the use of over 100 instruments, was convinced that the hand is the best of all instruments and stressed on this point. By internal manipulations extractions in breech, or internal podalic (or some times cephalic) version the child was delivered. If the attempts failed, destructive operations were performed taking great care not to injure the mother. The craniotomy was done with "Mudrika-knife" of decapitation with Mundalagra" or round headed knife and the foetus was extracted by means of a traction hook called "Garbha Shanku" the traction being applied over the chest, axilla orbits or cheek. Eviscerar tion was done when the obstruction was caused by a child with a distended abdomen. The dead child was also removed piecemeal (embryotomy) when other methods of delivery failed. Subsequent modifications of these instruments were made centuries later by Harita, who "Ardachandranana" or semilunar scissers to amputate the prolapsed arm before completing the delivery. Vagbhata used different types of perforators and decapitation hooks-



EARLY PATTERNS OF OBSTETRIC FORCEPS

1. Forceps invented by Peter Chamberlain (1630) and retained as a family secret for many years.
2. Palfyn's forceps ; two spoons, with handles clamped together.
3. Smellie's short wooden forceps, 1745; with lock.
4. Dusee's forceps, 1733 with lock.
5. Chapman's forceps, 1733 ; blades united by a simple groove, easily detachable.
6. Burton's forceps; 1751 ; slender Blades controlled by screw handle. Burton of York, was the original Dr. Slop of Sterne's "Tristram Shandy".

"mudrika or Angulishastra, Vriddipatra" and a special type of "mundalagra." Most of these instruments herein mentioned have been illustrated in the book "Surgical instruments of the Hindus" by Mukhopadya.

It is a fact that surgery and obstetrics in India did not advance a good deal since the time of Susrutha or Charaka except for occasional constributions like those of Vagbhata (8th century A.D.) and Vangasena (11th century). Two important causes for this are—(i) the devine origin of Ayurveda and the orthodox and authoritative principles laid down in the Samhitas of Susrutha or Charaka—which were unchallenged in the subsequent centuries. This is not surprising if one should remember that the works of Galen and Soranus (2nd century A.D.) held the field over the continent till the time of the Renaissance (16th century) (ii) influence of Buddhism—where dissections and surgery were not encouraged so much as medicine. Even later on, the political unrest and socio—economic instability of the country—harrassed by waves of invasion did not encourage any revival of the indigenous system of medicine. The muslims brought their own medical men and the Britishers established the Indian Medical Service—almost exclusive staffed by foreigners.

The ancient Hindus, though their knowledge of physiology of conception, pregnancy or of labor was not quite sound were skilful in the management of normal labor and faced with calmness, courage and dexterity the numerous obstetric complications. It is a fact that they had no idea of abstetric forceps to extract a live child—an instrument which was introduced into midwifery by the Chamberlens in the last few years of 16th century. Though Susrutha advised laparotomy for intestinal obstruction, he preferred vaginal delivery at all costs and no caesarean section. He mentions only of post mortem caesarean section, soon after a maternal death, to save the child.

If one traces the history of obstetrics down the ages to its present status, one will realise that the great advances were made in this field only in the course of the last 250 years. Prior to that in India or China, in Greece or Italy, in England or France, the art of obstetric did not differ materially from what was advocated and practised by the ancient Hindu physicians.

AGATHA CHRISTIE, the detective-story writer, lives most of the time in Baghdad, where her archæologist husband is working on important excavations. "An archæologist," she says with conviction, "is the best husband any women can have. The older she gets, the more he is interested in her.',

—*Reader's Digest*

* * *

A YOUNG California couple took a visiting aunt for a drive, and pointed out a fig tree as one of the sights.

"Fig tree!" exclaimed the elderly woman. "That can't be a fig tree."

"Certainly is," said her niece. "What makes you think different?"

"Well," said the aunt, subsiding a little. "I just thought . . . surely . . . the leaves must be bigger than that?"

—*Sherry North* (*Reader's Digest*).

The trouble with opportunity is that it always looks bigger going than coming. —Sylvia Strum Bremer.

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THE PLACE AND PRACTICE OF MEDICINE AMONG PRIMITIVE PEOPLE

By

K. V. S. MANI,

III Year.

Of course, everybody will definitely be dubious regarding the prudence of crediting people described as"Savages"and "primitives" with a profound and successful applied knowledge in the fields of Medicine, Surgery, Midwifery, Materia Medica, Physio-therapy and Psycho-therapy. But it is a paradox to which we have to be reconciled without resentment, taking into account the remarkable scientific knowledge and secret formulae possessed by them which are glaringly effective in comparison with anything ever employed by even the most modern chemists and doctors. It is imposible anymore to withold from admitting our awe and admiration at the incredible, but almost supernatural knowledge of those primitive pioneers. The injudicious notion that the inhabitants of the bygone age knew next to nothing about the art and science of healing is happily fast loosing ground. It is quite imperative to bear in mind that the primitive people are neither backward nor ignorant as dealt by some prejudicious depictions and it is only to be believed to realise that those to whom are being brought the rudiments of the Western Civilizations are, by themselves, capable of teaching lessons in many a field.

In order to duly understand and appreciate the "primitive therapy", it becomes essential to dispense with the almost nihilistic attitude displayed against the activities of these "premieval physicians". The magico-religious ritual, although it appears conspicuously grotesque to the hard-boiled conservatives, does not, by that sole reason, warrant any outright condemnations as "hocus-pocus", because it is not so at all. Instead, it is based on their own fundamental convictions that the malady was wrought upon its victims, not by the natural forces as accepted by us for the past two-and-a-half-thousand years, but by such supernatural agencies as spirits, Gods, Ghosts and sorcerers; having been outrageously provoked by the patient himself or by one of the members of the family through actions contraindicated by the moral codes of the faith of their tribe. The supernaturals were supposed to attack by injecting mysterious, disease-provoking, magic substances or spirits or by abducting the soul of the patient.

Our methods of diognosis by logical observations on the patient cannot naturally be expected to reveal such supernatural causations and consequently had necessitated the antiquarian diognosticians to have recourse to supernaturalistic techniques of divination by trance, dreams, crystal-gazing, bone-throwing etc. It follows too that their therapeutics had to consist primarily of rites to force out spirits, placate Ghosts and Gods and hunt up displaced souls, Incantations, spells and prayers accompanied by singing and dancing were naturally sought for to best achieve such aim.

Viewed against this background (which required. admittedly, cold compromise and unerring understanding) it becomes needless to admonish the primitives of any astonishing activities. Instead, we come to know that medicine in primitive society was part of their religion, belonging to the sphere of the sacred. This primitive religion did not inter-

pret Nature on its own terms, but, as if, man's relations with Nature were another set of personal relations. The disease-producing influences were no longer seen impersonally like our bacteria or glands ; but, in their place Spirits and Gods acted as punishing parents, Sorcerers like aggressive siblings. These explanations reflect on the fact that psychologically speaking, man, alike to an animal of an unusually prolonged infancy, is first and foremost impressed directly not by Nature, but, by his social relations on which his survival primarily depends and which he, thus, symbolises in his religion.

This extraordinarily uncanny conception of the Social Medicine in the primitive society, couched in religious terms, bears an unexpected and important consequence. Medicine and disease acquire social meanings and social functions which they do not possess in our society. And, the meaning of the primitive social medicine is easy to spell out. Be peaceful and the disease will spare you and go away.

Thus disease becomes the most important sanction against any social atrocities: the fear-instilling disease and the witch-smelling medicine man play the roles of the present-day policemen, priests and press. The fact that it is such an important pillar of the social edifice is perhaps the most influential of all the reasons when analysing the attachment of the primitives to their social medicine—and their religion.

To the extent that medicine loses the sphere of the sacred and happens to become secularised, that disease is concomitant to some active intervention of naturalistic and not supernaturalistic influences, its meaning and control in the society are lost sight of, which, undoubtedly, is an extremely unwelcome situation. Hence, those who strive to bring home the Western concept of medicine to people, who, as yet, have not disregarded disease in sacred terms, can often meet with better success by adopting their practices to such sanctimonious notions.

Perhaps, it is customary to conveniently forget that the magico-religious ritual of the primitive medicine man contains, in addition, at closer scrutiny, numerous other elements which will account for the success beyond the psycho-therapeutic factors alone. In the course of such complex ritual, whether performed in the African bush, the South American forest or among the Navaho of arid Arizona, magic potions are imbibed which very often contain highly effective drugs.

The people who are contemptuously called "primitive savages" might not have had any "wonder drugs" but, it was they who discovered the qualities of Cinchona Bark, of Coca leaves, and of the lianas from which they now manufacture Curare. Needless to say that the conquest of the tropics would have been well nigh impossible without Quinine ; the role of Cocaine in Modern Surgery cannot be overestimated ; as for Curare, poison acting on the nervous system, this is being put to ever greater uses in neurology.

These astounding discoveries enlisted above only serve as striking illustrations of our debts to the so-called primitive people, but the list is by no means exhaustive, and can be greatly extended if our consideration encompasses other fields of science and other parts of the world too. It is enough to mention that the "savages" of the Amazon were responsible for revealing to the world the wonderful qualities of rubber by putting it into practical use. For a very long time, the methods to transform latex from the HAVEA TREE into rubber were those of the Indians. Let no one say that these were accidental discoveries and not the fruits of scientific motifs. To have extracted Curare from STRYCHOS TOXIFERA, called for many long experimentations and for qualities

inherent in true scientists: to wit, a sharp sense of observation, keen patience and an innate urge for exploration. Had not the savages succeeded in mastering their environment? Why, they even possesed an empricial science in agriculture which agronomists are quick to praise and to draw inspiration from!

It so happens that the "Miracle drug" of the season, Serpasil, so benificial in hypertension and mental disease, is not a synthetic drug like some of its predecessors (the arsenicals or the Sulfa-drugs) but is derived from the plant, Rawolfia Serpentina, which, for decades, the medical missionaries in Africa had vainly pointed out to the Western Pharmocologists as a very effective drug of the primitives.

Serpasil is only one of the many drugs of primitive origin which play a paramount part in the present-day pharmacopoeia. Suffice to restrict the mention to such dramatically successful specifics as Strophantine. the heart drug; Pricrotaxine, the respiratory stimulant in barbituarate poisoning; and Emetine used in amoebic dysentry, It will be marathon work to compile all the known and unknown emetivs, purgativs, expectorants and diuretics realised effectively by the primitive people.

Thanks to a better accommodative turn that the modern scientists have taken, we are no longer blind to the fact that the primitive pharmacopoeiae are chequered with a surprising percentage of drugs of supreme choice besides a hoard of other unimportant and insignificant substances, common as they are, to all pharmacopoeiae, not excluding our own. History tells us that the Spanish conquerors of the 16th century were sufficiently impressed by the drug lore of the Indians to initiate and institute research in that field. It is undeniably an unfortunate loss that the modern scienc chose to stand aloof from such studies among the "Superstitious Heathens" disconcertedly for at least a century. But, lately, the pharmaceutical industry has been sufficiently interested in the potentialities of such studies to patronise the revival and refinement of the ancient drugs. It is only to be expected that an admirable knowledge of the efficacious drugs possessed by the primitive people will evolve out of these unbiassed studies. But it is clearly out of the scope of this article to deal with the ways and means adopted by those primieval pioneers in amassing such amazing skill and knowledge, devoid, as they were, of our inductive methods.

It is absolutely astounding to notice how vast the faith and practice in Physio-therapy were among the primitive people. The magical manipulations and the purification rites that were being performed, correspond largely to our own Physio-therapy. They had realised that drugs were not the only effective weapons to be used against the human affilication. Their ritual comprised of such physical agents of proven values too, such as Baths of all sorts (including Sweatbaths), Massage and Dry-Cupping. Except for the last mentioned that has since been given up, we still retain the other physical agents in practice to this day.

We can easily understand why the primitives were less active in the field of Surgery than in medicine and physio-therapy. The fear inculcated in their minds by such irrational procedures like mutilation as a form of punishment was largely responsible for the apparent doldrums in the surgical field. But, this is also due to the technological insufficiency and scientific inadequacy, which, till a hundred years ago, made even the practice of Western Surgeon hazardous. "Active" surgery, which to us to-day is the essence of surgery, is quite a recent phenomenon appearing with a bold front only after the invention of anaesthesia, asepsis and a localistic approach in pathology. It is thus not surprising that the primitive surgery was usually limited to lancing of boils, blood-letting and

what seemed to be quite effective wound and fracture treatments.

True, there had been stray incidence of Major surgery in the primitive era. The people had invented clever devices like the closing up of wounds with the mandibles of large ants whose heads were broken off (Somalis, Brazilian Indians). In a few regions, surgery had developed further. The East African Masais amputated the hopelessly fractured limbs and enucleated the eyes. There had been cases of drainage of empyema by cauterisation of thorax, excision of neck glands, removal of uterine polyps and suturing of the intestine. The Elles Manders used shark teeth to remove fatty tumours, Elephantiasis Scrotum, tuberculous glands and old ulcers.

Most baffling it is to come to know of the successful performance, by primitives of particularly two operations, greately dreaded by the western surgeons up to the end of the last century, namely, Caesarian Section and Trepination. The former is reported again from East Africa, the latter from several African regions, most of the Oceania and the Americas, especially Peru.

In the field of obstetrics, we came to know that the more or less sitting posture during child-birth was adopted. But it is really ingenious that certain Eskimos and Bantus had invented, independently, incubators for premature infants, a technique developed in the West only as late as the later half of the nineteenth century.

The primitive people, tremendously equipped, as they were, in these fields, they revelled more in Psycho-analysis and Pschyo-therapy, concerning which, only a very brief evaluation is possible here. It may be a sad blow to many people who entertain the opinion that these branches of science are revolutionary innovation of recent origin (like genetics, theory of relativity) and to some who abuse these as absurdities of perversed modern minds, to know that Psycho-analysis and Psycho-therapy have simply rediscovered and expressed in new terms an approach to mental illness which probably dates back to the earliest days of mankind who had used them, often with a skill, that leaves our foremost practitioners flabbergasted.

It is interesting to know that mental disorders were attributed by the primitives to the influence of the traditional "spirits" of the jungle. These spirits were supposed to be invisible but alive and borrowed the body of somebody else for their earthy manifestation. The person so happened to be chosen bebecame the spirit's "Horse". that is, the spirit "climbed" on his shoulders and "possesed" him.

Thus when a man (or woman) showed signs of mental instability or behaviour oddities, it meant that one of the spirits wished to possess his (or her) body. The individual visited a ZIMA (priest and doctor combined) who, after inititation and conditioning sometimes as long as one year, identified the particular spirit and prepared the new, "horse" for a dance ritual. As a result of the "Possession Dance", the individual was cured of his disorders and was enabled to resume a normal life.

It is worthwhile, in this connection, to illustrate a ritual that was connected by the Cuna Indians of Panama in a case of difficult child-birth as recorded and published by Swedish ethnologists. In that particular ritual, the tribal witch-doctor or Shaman stood before the ailing mother and began a chant recitation, explaining that her misery was due to the temporary absence of the soul which controlled procreation. The Cuna Indians believed in the existance of a multitude of souls, each of which was in charge of some certain function of life.

In that particular case, the soul had been supposed to be missing some evil spirits having carried it away. The witch-doctor, accordingly, conjured up a picture that he was setting out on a supernatural quest for the lost soul. With a dexterous luxury of details, he described the obstacles he surmounted, the enemies he encountered and how he overcame them by force of guile before reaching the prison of captive souls. Then he released the soul and induced it to resume control of the suffering body at his side.

We have no reason to suspect the success of this cure which presents a number of highly curious facts. It is purely psychological; No drugs are administered, nor the patient's body touched. The witch-doctor had simply recited and chanted depending on his speech alone to bring out the remedy. In describing the cause of the ailment and recounting his adventures in the supernatural world, the witch-doctor paints in the minds of the listeners familiar pictures drawn from the beliefs and myths which are the common heritage of the whole community. The illness is considered to be of psychic origin and the treatment rendered is also purely psychological. Because of symptoms which he is unable to control or since he is simply suffering from a mental stress, the patient feels cut off from the community and calls in the doctor whose authority is recognised and revered by the group, to help him to regain his station in the society. The treatment seeks to induce the patient about events stacked in his subconcious mind, but, which, despite the passage of time, still govern his feelings and attitude to life.

It is significant that the primitive system was more daring and efficacious than our own is. According to the tribal theory, it was not sufficient to remove the social inferiority attributable to the illness. It ought to be transformed into a positive advantage, a social superiority comparable with that which we behold in the creative artists. They had realised that one means of remedying a mental disorder, harmful to the individual suffering from it as well as the community needing the healthy co-operation of all, was to transform it into a work of art. Have we not treated many geniuses like Gerard de Nerval, Van Gogh and others, as psychotics? Though this ideal is seldom pursued by us, it is precisely to that we owe the work of such artists as Utrillo.

We have much to learn from the primitive psychiatry. Still in advance of our own psychiatry in many respects, how far ahead it must have been not so long ago (tradition die so hard) when we knew no other means of treating mental patients than to put them in chains and starve them. Let us remember too that the death of the "primitive" civilization which so many people advocate in the name of progress, will also see the vanishing of much knowledge that is not without significance for our own civilization.

Reference :

The Unesco Courier.

" At Oxford you may hold what opinion you phase so that you hold your tongue "

—EMERSON.

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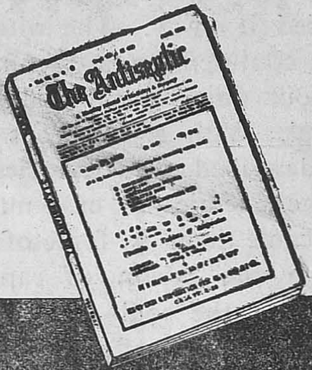

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HISTORY OF LEPROSY

(PART—1)

By

DR. FRANS HEMERIJCKX,

Belgian Leprosy Clinic, Palambakkam.

Whereas plague, small-pox or cholera epidemics pass over countries as deadly hurricanes laying down much havoc, leprosy is gnawing health and strength, body and moral, and happiness out of people, day after day for centuries.

Leprosy is the most spectacular of all diseases, because of its long evolution, its multiple and endless deformities of the face as well as of the four extremities; it has caused horror and fear to the extent of panic.

People believed and religions taught so, that leprosy was of supernatural origin and some divine-punishment for faults or crimes committed in this or in a previous life by patients themselves or by their ancestors.

In most countries and at most all times, both fear and culpability were on the root of very old prejudices and antipathy to the extent of hostility against those struck with the "great disease".

History of leprosy cannot be called "glorious".... it is a long chain of moral and bodily pains and sufferings and miseries caused by the disease itself as well as by the unsympathetic attitude of healthy people. Leprosy seems to be as old as mankind and its history is lost in the prehistoric ages.

We will have a look at its history:

—at the dawn of historic times.

—in Mediaeval Europe.

—in contemporary and modern times.

(A) Leprosy at the dawn of historic times: Traces of leprosy are found in various documents from the oldest civilizations. As in so many other problems of those old civilizations, opinions vary, discussions are still open and often the interpretations are opposed because of incomplete knowledge of gone languages, and of vague, uncertain and inaccurate clinical descriptions which do not correspond with what we know about actual leprosy. It must be added that many historical statements pass from one edition to another, from one author to another without investigation into the original documents, without verification of their accuracy and historical value. (1)

In Egypt: Unless more recent work has produced new evidence, it appears that we have no definite proof that leprosy was common or even known in ancient Egypt. (1) No leprosy lesions or multilations have been found in mummies or statues. (2) One positive statement of Sauton has never been confirmed. The egyptologists discuss over the word "UCHEDU or UXEDU used in the medicalpapyrus of Ebers and in four others; as the name Uchedu is not accompanied by clinical description or by vague ones (2), there are many different interpretations including leprosy. The same happens to the word "SET" showing some relations to the hebrew "Seeth" or "Cara'ath" of the Bible.

In many Bantu-languages in Central Africa, leprosy is called: Naudi or Shudi or Ushudi; in others "Lehata", in "Abyssinia, "Qomata". Can we see any relation with Uchedu or Set ?????.

In Babylonia and Persia: What has been taken for leprosy in Gilgamis-Epos and in Avesta is too confused to be affirmative. (2)

In China: Old references in ancient Chinese literature (Su-Wen) describe numbness, colored patches, ulcers, sinking of nose; (3) but only in the VII century A.D. there appears fairly definite clinical description, such as that it is impossible to confound with any other disease, mentioning: anesthesia, paresthesia, pain in extremities, anhidrosis, loss of fingers, deformities of bones, loss of eyebrows, hoarseness, (4) and it is stated that the disease was common, one record giving 600 cases treated and one in ten cured (1). In the XV century is made the first mention of chaulmoogra oil treatment, at least 2000 years after it was in use in India (1)

In Japan: Much under the influence of Chinese medicine, leprosy is described in the VIII and IXth century A.D. The oldest leprosy-colony was found at Nara near Kyoto. probably where Empress Gwyo (718-740 A.D.) is said to have washed 1000 lepers with her own hands. Empress Komyo (740) is also said to have taken care of leprosy patients.

We note that in China very early ostracism was practised (VII century) (1); in 833 A.D. in a Reisikai commentar it is said that leprosy pass over to persons coming in contact with patients, and it is only after Buddhist influence that leprosy was believed to be a divine curse for crime committed in previous life. (4)

In India: This is quoted from Dharmendra (5) "Regarding their authenticity, the reference to leprosy in the ancient literature of India, stand out as a contrast, since the clinical description of the disease given therein includes sensory changes and deformities, and one can therefore feel sure that it actually refers to leprosy as we know it to-day."

Lowe says: "Under different heads it describes most of the signs and symptoms of leprosy even in its milder form, with which we are familiar to-day."

One should read over those clinical descriptions of KUSHTHA in the SUSHRUTA SAMHITA.

"The regular use of TUVARAKA seeds cleanses the system of the patient and is a potent remedy against Kustha. The oil expressed from Tuvaraka seeds is to be taken by mouth and is to be used externally for rubbing the affected parts." (5) It was generally believed that this Tuvaraka was Gynocardia Odorata or Taraktogenos Kurzii; the study of Dharmendra proves that it is HYDNOCARPUS WIGHTIANA, for geobotanical reasons.

As for the etiology: "Kushtha is considered to be a highly contagious disease, transmitted from the diseased to healthy persons by the touch or breath of the patient, by sharing the same bed, by drniking and eating out of the same vessels with him or by using the wearing apparel, garlands, etc., previously used by the patient. It is interesting to note that all the modes of transmission described by Sushruta imply close contact with the patient." (5)

While describing leprosy as highly contagious, Sushtuta has at the same time considered it as heriditary. (5) (I think probably misguided by the common observation of leprosy as a family disease or a home disease.)

"Sushruta also mentions that wise men held that some times a man is cursed with the dreadful disease by way of divine retribution for acts like killing a Brahmin, or a woman or one of his own relatives etc. This is responsible for the unsympathetic attitue toward persons suffering from leprosy occasionally seen". In more ancient literature, the MANU SMRITI and the VEDAS, there are references which may refer to leprosy also, but we cannot feel sure (5).

Leprosy in the Bible: There has been much controversy about "CARA'ATH" in the Bible, which has always been translated as "leprosy". Most of the controversy refers to the book "Leviticus" chapter XIII and XIV.

Many points have to be considered:

1°—The Bible and the word "CARA'ATH" were translated in Greek in the 200s B.C. LEPRA was probably the correct translation, as lepra means, not leprosy, but different benign superficial squammcus skin diseases, may be including some type of leprosy. True leprosy was called in Greek of that times, especially lepromatous leprosy by ELEPHANTIASIS or LEONTIASIS. Lepra was mostly used in plural: *ai leprai*. Lepra was later translated in Latin and the vernaculars as "leprosy" but the word leprosy had not the same significance as lepra.

2°—Many leprologists do not see any description of leprosy in the Leviticus, and if it is, then it is only of a maculo-anaesthetic form, there is no mention of nodular type, nor of anaesthesia, nor of deformities. In others opinions Cara'ath is a mixing of different skin diseases, including leprosy—one can recognise the true leucoderma, with its white patches and white hairs. This is a very plausible explanation, even to-day, doctors also have confounded some skin diseases with leprosy. (3)* Amongst modern leprologists none agrees that cara'ath is actual leprosy as a whole.

3°—The Bible describes, with rather the same symptoms, such things as leprosy of clothes and of the walls of the houses; even to-day in popular language and in literature "leprous" is used in a sense of covered with patches, or eruptions (a leprous animal) or dusty and dilapidated (a house in a leprous condition). (4) †

4°—The true sense given to "Cara'ath" is in the conclusion of chapter XIV: "this is the law for all wound of leprosy and for the netheq, for leprosy of clothes and of houses, for the tumours, the eruptions and the patches; it shows when a thing is unclean and when it is clean. This is the law about leprosy." May be this mosaic law has in mind some hygienic prescription because the purification includes shaving, bathing and washing of clothes; but there is as well some offerings to Yahweh, some sacrifice of animal, some ointment by oil for the expiation of the unclean. All these last ceremonies took place through the hands of the priests; the priest declared unclean and declared clean also.

No doubt that this cara'ath, what ever might have been its complete signficiance, has a religious significance.

5°—This mosaic law was very hard and harsh "the leper affected with wound will have his clothes torn, his hair fluttering, his beard covered and cry: unclean, unclean. As long as he has a wound, he will be unclean, he is unclean; he will live alone; his residence will be outside the camp."

It has been said that those biblical representations and its heartless seclusion out of the camp accounts till to-day for the childish fear and unsympethetic attitude of people for leprosy in Western countries through the middle-ages.

That is not true; the same attitude existed in countries where there was no Bible and probably has existed before the Leviticus was written; we can as well accept that those

* No longer than last week I learned from a case introduced in Court for divorce on account of a very infectious and dangerously communicable disease; the lady had nothing more than a nice leucodermic white patch.

† With reason, the "STAR", magazine edited by the patients of Carvillee Leprosarium, U.S.A. and many people with them have launched a campaign to use the words leprosy patient or case, instead of leper or leprous. They go as far as to abolish also the terms of leprosy and leprosy patients, and replace them by Hansen disease and hansenians. But in most langnages the typical word used for leprosy has not any fancied significance.

biblical and other religious prescriptions were formulated due to the fear of people for the disease.

But there is another point that makes the essential difference: the one affected with cara'ath, was also affected with the divine wrath, was unclean, and was an interdict for having offended Jehovah ; the poor "ladre" in the Middle-Ages, was chased and secluded, without any doubt, as a prophylatic measure. To help him in his distress was a charitable act, agreable to God (2).

Leprosy sucrly was with the Hebrews, but one can hardly admit the statement of Tacitus that they were driven out of Egypt because 80,000 of them were affected with leprosy.

Leprosy in the Mediterranian world of the Greeks and the Romans: Leprosy was known in Greece relatively late (Philon). Rufus says the ancient Greek did not write anything about elephantiasis ; may be that the "morbus phenicus" of Hippocrates (460-375 B.C.) means leprosy. Plutarch states that elephantiasis was first mentioned by Athenodore as existing at the end of the 2nd century B.C. Later about the time of Christ, Celse, Pliny, Rufus, Galen, Atetee, gave a fair good description of elephantiasis as lepromatous leprosy and of leontiasis as the acute stage (lepromatous reaction ?????). For them leprosy was a contagious disease and segragation was advocated.

Lepra or better leprae had the sense of scalous disease.

We have no certitude that leprosy existed in Rome before the III century A.D. there is not any law or restriction known for it, nor was there any mention in the rules about selling slaves.

For the Byzantin Period: (after 395 A.D.) few things are known about leprosy. Constantin is said to have been cured of the disease by baptism, but this is related probably to "moral" leprosy ; Gregory of Nazianze (330-390) made in one of his homilies a nice plea for the cause of the lepers ; there was an hospital for leprosy in Byzance and there were leper houses in Armenia : but nothing is known about any special law for leprosy.

Among the Germans and the Scythes: according to Galen, there was no leprosy.

Leprosy spread into Gallia and other Western countries: probably from East to West in southern Europe by the Pheniceans in earlier ages (Zambaco Pacha) and later by Roman armies ; then from South to North to the British Isles, and from West to East into Germany and central Europe.

In those centuries Europe was sumberged with invasions and mixing of populations.

- —invasions of the Romans, carrying with their armies people of all Mediterranean origin, beginning with Julius Cesar 59-51 B.C.
- –invasions of the barbarians: the Francs crossed the Rhine from III century, great invasions in 407 ; the Huns in 450.
- –invansions of Moors and Sarrazins in Italy, Sicily, Spain and south of France ; the battle of Poitiers in 732 ; in some southern areas, leprosy is still named the "Arabic disease".
- –incursions of the Normands from beginning of XI century.

Then, there were pilgrimages from all over Europe to Jerusalem ; trades with eastern articles were very active in the ports of Amalfi, Pise, Genoa, Venice.

The Crusaders (1096-1270) have completed this thorough mixing of European peoples, between East and West.

It has been alleged very often that the Crusades were responsible for leprosy in western countries. It is not true. There was plenty of leprosy in Europe before the crusades. Already the synod of Orleans (549) and Lyon (585) and the edicts of Rotharis (643), Pepin (757) and of Charlemagne (789) dealt with the social problem of leprosy and leper-houses. There were at least 31 known big leprosaria before the Crusades: Saint Oyan in France (460), Chalons sur Saone (VIth), M e t z, Verdun, Maestricht (VIIth century) and innumerable small rural ones (6). Chroniclers mention leprosy and the charity and devotion of the Saints to lepers: the monk Martyrin about 600, A.D St. Radegondis of Thuringe kissing the uclers (died 587) St. Eleutherius, bishop of Tournay (Belgium) healing leprosy (died 523), and tens of others; in 1048 was founded in Palestina the famous order of St. Lazarus for the care of lepers.

Reproduction of a miniature of "RECEUIL DE LEGENDES PIEUSES" from the Cabinet of Manuscripts, Brussels:

This miniature symbolizes truely the double attitude and feelings of people to leprosy in Mediaeval Europe. On one side repulsion and fear, a man terrified by the approach of a leper draped in his mantle and capping his clapper……sismortuus mundo……; on the other side, Our Lady bringing consolation, mercy and charity to a leper sitting lonely at the doorstep of his hut : mysticism, religion, charity ……vivus iterum Deo……

There are a lot of iconographic documents about leprosy in Europe, I wonder if there is not something about leprosy in the thousands of carvings, sculptures, statues and paintings and old writings of India.

Leprosy at its peak in Europe during the XII-XIII-XIVth centuries: I shall be short about its history ; it would take books ; there are a multitude of documents, chronicles, literature, poems, manuscripts, miniatures, lists of patients, registers of expenses, seals, banners, wearing apparels, engravings and paintings scattered over the libraries and museums of Europe. There are still buildings and ruins of leper houses and there are hundreds of localities, hamlets, places, related to leprosy. Many of our actual big hospitals are the developments of old leprosaria ; so is St. Peter's hospital in Brussels and Stuivenberg hospital in Antwerp. It happens that the oldest prose text in my own language (Flemish) are the rules of the leprosarium of Gent (1236).

To understand the facts about leprosy in Mediaeval Europe one should consider three general points.

1°—The fear of contamination sometimes turned over to panic ; hence the prophylatic segregation of the patients, generally voluntary or by moral pressure, but also by compulsory means sometimes turned over to cruel methods.

2°—An outburst of religious and charitable feeling for those sufferers; there was more charity than treatment, gone so far as to put them in their own bed and living in the leper houses with the patients a religious life as in one single religious order. There have been big notorious abbeys of leprosy patients.

3—There was little scientifical knowledge about leprosy, diagnosis was rather rudimentary with a lot of fancy symptoms, and treatment also was superficial. In many

places, to be sure of diagnosis, true leprosy patients made part of these examination jury before segregation was decided.

About the Number of Leper houses: It has been stated that there were 19,000 leper-houses scattered over Europe. The chronicles of Mathew Paris (1244) say in reality that there were 9,000 manors held by Knights Templars and 19,000 by Knights Hospitalers. Probably not all those manors were leper-houses (1), but on the other hand, not all leperhouses were managed by those Orders. No verification is possible. But we know that there were more than 600 in Belgium, that St. Louis, king of France, made a donation to 2,000 leperhouses that there is for a part of France an official record of 1,502 houses that there were 59 in the diocese of Paris that when leprosaria were closed in 1693 for lack of patients in France, this order affected 1.133 establishments. (1) There were 7 in London surroundings, 20 around Norfolk. There is a lot of information about hundreds of leper-houses in Ireland, Germany, Netherlands, 187 in Switzerland, in Spain, Portugal, etc.

We can guess nothing about the **Number of patients**; endemicity was considerably high and also was the effort to fight against it. Population was much less than to-day and we know that once Black Death (plague) killed about 1/3 of them.

Very often objections arise about the **reality of this leprosy** in the leperhouse. Surely there must have been a lot of leprosy by error, there was leprosy by abuse for vengence, there was even voluntary simulated leprosy, and there were healthy people in the leperhouses; but it is obvious that most of the leprosy was true leprosy. Moller Christensen has had the good luck to prove it, laying hands on a number of skeletons in the burial grounds of Danish leprosarium Naestved (from 1250 to 1550); out of 147 skulls of adults, 112 (= 76%) show what the author calls, a typical "facies leprosa" with marked atrophy of the alveolar process of the maxillary bone and atrophy of the anterior nasal spine. And many bones with atrophies and deformities of the extremities. They were on show at the Congresses of Madrid and Rome. (7) In this Naestved material so far, no case of tuberculosis, nor of syphilis has been found. These skeletons, no doubt, are of an advanced stage but there must have been in those days as well as to-day, benign cases and early cases of leprosy. It is more likely that many cases were looked over (as it is still to-day) if one reads the creteria and unequivocal signs of leprosy in the writings of doctors as Guy de Chaulleac. Ambroise Pare, Conrad Gesner and others.*

There were many **Types of Leperhouses**: there were in the form of separated huts, there were in the type of villages, there were agricultural farms with land, cattle, orchards and vegetable gardens, there were also with collective kitchens, dining rooms and bed-rooms. Many of those leprosaria were very rich, as charity and fear brought plenty of donations in kind and cash; but one cannot deny that some of them were miserable and primitive. All towns and most important villages had a lazaret; in small villages many patients lived in a hut in the fields hence the name of "akkerzieken" (the sicks of the fields).

Surely there have been uproars of popular emotion, killing hundreds of lepers, but in general their **Way of Life** was better than generally thought of. Those leperhouses were not "places of horror". Many registers of expenses still exist attesting the number of feasts, the large rations in money, wheat, sweets, meat, clothes and wine; there were even big dinners with the members of the

*The atrophy or the anterior nasal spine has been introduced in clinical medicine as a new sign of leprosy under the name of "the Bergen Symptom" by Moller Christensen. The diagnosis can easily be made by X Raysor by palpation. Another finding on those skeletons, deep vascular furrows on tibia, may open new views on the mechanism of bone atrophy and bone resorption in leprosy.

community (one should say here, of the panchayat board). Some of the menus were really "like my-lips." But the life of the "free lepers" was much more unhappy, more I should say than the leper-beggars along the temple roads of India.

In certain countries and at certain period a **Symbolic but Lugubrious Ceremony** took place, "putting the leper out of the world", a ceremony most similar to the one for the dead; the priest saying: "my friend, you are for the world, but still living for God." Then the patient had to listen to the lecture of the "defenses", a lot of rules for prophylactics or supposed to be prophylactic measures for the protection of the healthy. "Deffenses", too long, too varied and too numerous to give a list of them. He was given a special garment, hat and clappers to warn for his approach, and was often accompanied by a procession to his isolation hut, after an exhortation to the community to have mercy and charity for him and pray for him ; he was left alone witht he consolation : God never abandon you—be careful—have patience—God is with you."

The Decline of Mediaeval Leprosy Endemy :—From the middle of the XIV century leprosy began to decline ; in the begining of the XVI century many leperhouses were empty and others had only a few patients; in the XVII century there were no cases except in some limited areas (Bretagne in France) or in some countries (Norway, Spain.)

An impartant question:
Why this Decline in the incidence ?
What has been the Prophylactic value of Segregation ?

It is impossible to give a straight answer : there are many points to be considered and there are so many opinions varying from segregationists to antisegregationist. While considering what might have been the determining factor in this decline, one must note that it took centuries to get rid of leprosy.

(a) Jeanselme (2), without denying the possible role of adjuvant factors admits that the segregational and pryphylactic measures of the Middle-Ages were the main factors for the decline of leprosy. Arguments: the results of Norway segregation method, mitigated and more human, applied at the end of last century, when there were still 2833 patients in 1856; to-day there are only 5 or 6 old cases left. There is also the Memel epidemy with 77 cases where the spreading stopped all over with segregation; there are other examples. On the other hand, in Island where the 4 leperhouses were closed in 1844, leprosy spread again. (4)

(b) Others not so affirmative support contrary argments: that segregation was incomplete—never carried on in a strong way (4) patients continued to beg and to walk around and lived in the leperhouses with healthy people; that only advanced cases were segregated, allowing less advanced cases, but already infective since years, to stay out, due to lack of knowledge or diagnosis; that after emigration to North America of 160 Norwegian lepers, leprosy died out without segregation; and that compulsory segregation in recent times has been a failure (8). (I hope to give more details about the influence of segregation in the contemporary part of this history.)

(c) Many other factors have been pionted out.

—the arrival of new cases and new infection stopped with the end of the Crusades.

—it is possible that the catastrophical epidemics of plague (1347-1350) and cholera have contributed to the elimination of infective patients offering less resistance to the infection.

—It was in those centuries, but more specially at the end of the XV and the begining of the XVI century that substantial changes were started and put to effect in the

standard of life of people.: from one-roomed huts to more spacious brickhouses, from soil pavements to brick or tile pavements, more and more better and varied food, use of spoons and forks instead of hands for eating, upcome of individual plates on tables, better and more individual sleeping accomodations, better hygiene and commodities in the "auberges" (sort of choultries), introduction of linen underwear which could be washed frequently, and of handkerchiefs, and especially the general use of soap, Hansen claiming that soap is the best prophylactic agent in the control of leprosy.

—Molesworth thinks that there must have been a natural selection of the most resistants. It is possible that in countries without leprosy this resistance again is lost; in his opinion the actual high incidence in India and China is a second wave of this disease. (3).

—Without such emphasis the problem has been raised of a possible decrease in virulence or an acquired immunity.

—Chaussinand (3) admits as one of the causes of decline of leprosy in Europe, is the antagonism of leprosy and tuberculosis. Tuberculosis being more virulent than leprosy the Koch bacilli spread much faster in countries where the germs of both disease enter into competition. If a first attack by T.B. bacilli determines a certain degree of antileprous immunity, the organism infected or simply impregnated by the Koch bacilli will be in a state of relative premonition against a further attack by the pathogenic agent of leprosy. The result will be a progressive eviction of leprous infection. Chaussinand is persuaded that the decrease of leprosy was partly due to the increase of tuberculosis.

After the disappearance of leprosy in most countries not much happened in the history of leprosy till the edition of the book on "Spedalsked" in 1848 by Danielsen and Boeck in Norwey. A view in the contemporary and modern history of leprosy will be completed in a next issue.

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(*To be continued*)

✻ A Knight, about to set off on a long expedition, locked his beautiful young wife in the traditional armor and gave the key to his best friend. "If I fail to return in one year," he said solemnly, "you, as my dearest friend, may use this key."

The knight then mounted his horse and galloped off. But no sooner had he passed the town', gates than he spied his friend galloping madly after him. "What's wrong?" cried the knight as his friend finally caught up and reined in alongside him.

"You fool!" cried the friend. "You stupid rat! You gave me the wrong key!"

Ancient Ophthalmology and Modern Thoughts *

By

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I

Ancient ophthalmology both Indian and Western has a long history to tell. Some forty centuries ago, long before Herodotus, there was the code of Hammurabi detailing rewards and penalties for the doctor. The Code enacts definite amounts as fees for a successful eye operation and it also enjoins definite punishments even to the extent of cutting off the surgeon's hand for an unsuccessful eye operation. This ancient period of Western Ophthalmology may be roughly compared to our Nimi's Ophthalmic work in the *Dhawannwantari* Age. The Nimi Maharshi is supposed to have written the first book of Ophthalmology and from the manner he is quoted by the succeeding writers, he must have been a *othapdhanan gnana dhanagya shayee.*

The next phase in the Western ophthalmology is the much developed Egyptian period. According to Ebers the Egyptians knew "blepharitis, chalazion, entropion, ectropien, trichiasis . . . pterygium, leucoma, iritis, cataract . . . " (Sorsby). Their six medical books of Hermes containing Divine Knowledge of healing were lost to the world even as Nimi's first sacred ophthalmology book was lost to us which was evidently a part of Brahma's revelation "*Brahma smrithayusho Veda* . . ."The succeeding Atreya and the Taitreya Samhita period looks close on the Egyptian achievements.

The Greek period was soon to follow and their asclepiadae, a group claiming direct descent from their God, freed medicine from the shackles of priest craft and pretentions of supernatural cures. One of these asclepiadae, born in the Isle of Cos, was the great Hippocrates. From Hippocrates to the greatness of Rome, a long period of about 800 years, there was continual development in which ophthalmology shared. Our Charaka—Sushruta age comes in here. Sushruta was the son of Viswamitra and a pupil of Devo Dasa, the King of Benares, who was supposed to be an incarnation of the Celestial Physician Dhawannwantari (K.L.Bhishagrathna--Vol. 1) It was about this time that the Buddhist Nagarjuna, tried to improve on the very poor anatomical knowledge of Sushruta and listed 76 diseases of the eye.

Greece declined and Carthage rose. The dominent Barka Party created an upheaval in the country and the Alexandrian school of thought produced wonderful results in ophthalmology which was in effect the "summum bonum" of Greek thought with minor additions. The Peonic wars overtook them and Rome came to prominence and their Celsus, Pliny and Galen arrived on the scene—"Of Galen's contributions to ophthalmology, it is perhaps enough to say that nothing of any value was added—17th century." (Sorsby). The Arabic period soon followed Galen and although Ali ben Isa and Ammar ben ali and others wrote text books of ophthalmology "they had not learnt the crowning wisdom that fact is greater than dogma." It is about this time that our Simha Gupta Seena Vagbhata produced mighty changes in ophthalmic thought in India Like men of his eminence in the West he also wrote text books in Ayurveda and allotted 8 chapters for ophthalmology.

* Reprinted from previous numbers of *The Journal of the Stanley Medical College.*

From the Arabic to Western middle ages and thence to modern period there is a gradual and fruitful change-over during which time our Indian ophthalmology stood static. This in short is the growth of ophthalmology of East and West.

Thus we are happy to own that we have, like the West, a decent heritage in ophthalmology, starting from the Vedic periods and descending through the Samhita periods to Nagarjuna of the Sushruta age and hence to Vagbhatta to Sreekanta Datta of about 1300 A.D. We have thus inherited a precious progressive knowledge perhaps excelling the contemporary Western thoughts of the past.

In the field of development of the human eye our ancients have done a bit better. Their "Pancha-Bhuta" conception of eye said that "app" contributed to conjunctiva and sclera; that "vayu" gave the pigments of the eye; that "Akash" produced lacrymal sac and glands and a combination of all gave "Drishti" the vision. This conception of embryology of eye at that remote past gives us a pardonable pride in our achievements.

The pre-Hippocratic anatomy was speculative, Aristotle's anatomy was rudimentary, Heropholius of the Alexandrian school was lost—though elaborate and creative and that of Galen's was confusing and ill-informed. After Galen, the study of anatomy was more a historical exercise of commentators till early 18th century and then followed the modern trends. In India, the pre-Sushruta period was equally dull and insipid. The great "*Shareerae Sushruta Shresta*" introduced "Shareeram" which was anatomy and Physiology and Pathology combined. Our great Sushruta describes anatomy of the eye in his text as follows :—*Vaidyath dwa angula bahulyam . . . nayana bubudam*" (uttara stanum) which means that the eye ball is two fingers in diameter and is about the breadth of one's own thumb and two and half fingers in circumference and look like the teats of a cow; It is surprising how description of this nature entitled him to "Shreesta" in "Shareerum"! It is suggested that he classified "Shareerum" into two parts: one dealing in the gross anatomy (Sthulum) and the other "Sukshmum" which is minute anatomy based on the *Tridhosha* theory which is Physiology and Pathology combined. It is also contended by the milk and honey protagonists that, but for the requirements of surgical exactitudes necessary for operative technics of an organ, it matters little whether our heart is inside the skull and the liver is under ths toe. Be that as it may, Ayurvedic anatomy consists of 5 circles of Mandalums; 6 joints or Sandhis, 6 coverings or Patalums and the more we read the details of each, the more we feel how our great ancients fell from the sublime to the ridiculous in anatomy. Even the much later Vagbhata who gave pearls of wisdom in Ayurveda describes his Patalums in such a confusing manner that we are forced to echo Hirschberg's verdict in another connection that he did not uuderstand what he is about. Indeed these Patalums and their descriptions are as much Indian as Western and according to records it looks more Western than Indian in origin. The contributions of Sreekanta Dutta were no better. In recent times our revered Dr. Moonje of Hindu Mahasabha fame tried to enhance the ancient past and just gave a modern anatomy in ancient Sanskrit.

The pre-Hippocratic and to a great extent the post-Hippocratic people thought that vision was due to rays emitted by the eye which travelled through a hollow tube of eye connected to brain. Plato attributed it to the blending of two rays; one from the eye the other from the object seen. The Alexandrian school held that lense was the seat of vision and sure enough Galen followed that idea and produced his "pneuma" which he thought "derived from the brain, fills the space in front of iris, dilates the pupil and surrounds the lens". Ar-Razi of the Arabian school tried to improve the physiology and

published a monograph. Alhazen in the II century improved on it and then came Donders, Peckham, and others. Marriotte discovered the blind spot of eye, Briggs described the optic papillae, Muller described the rods and cones, Weber studied the cones of the maculae, Helmholtz did the optics and so on. During these rapid improvements our conception remained with the good old "Panchabhuta" which was as egregious as their Anatomy. Even this "Panchabhuta conception is not confined to Ayurveda only. The Ionic school had four elements: water, fire, earth and air and they also like Sushruta gave matter its cardinal properties. They also described the humoural balance of healthy body and gave crudity, coction and crisis as three stages in the imbalance of humours.

The conception and classification of disease of the eye are equally interesting.

II

The Ayurvedic conception of diseases of the body has an interesting episode. In that remote past of ancient India, the sages of the Aryan culture held a conclave in a remote Himalayan rendezvous to postulate methods to conquer human afflictions. Agnivesa, Vasishta and other revered Rishis participated in the deliberations and they produced the "*Ayusho Veda*", the Ayurveda, (the Science of Life), to ensure human happiness. As a result of this Vedic revelations, a conception of the nature of diseases of the flesh bore fruit. This succient exposition was later adumberated by the succeeding authorities like Charaka, Sushuta and others in their compilations and thus came about the treatise on the *Thridosha*-Theory of diseases in Ayurveda. *Vayu, Pithu, Kapham cheethi Treyo Dosha Samasatha...cha*". Broadly speaking they expounded that the vitiation of one or more of the three Doshas or their combinations, vitiations or imbalance are the causative factors for a disease. They also said that health is but a relative term and it is maintained by the blending of three factors to produce a harmonious equilibrium in our complex human system. "*Rogasthu Dosha Vaishamyam, Dosha Samyam Arogatha*......"

It is unecessary here to go more into details about this oft repeated much abused contraversial and elusive Thridosha conception. Suffice us to note that this theory was *ipso facto* applied to disease of the eye with this emphasis *viz.*, that starting from the first stage of accumulation of Dosha and passing through the different stages of expansion and permeation, the offending Dosha comes to localisation to produce various diseases in the eye, be it inflammatory, neoplastic or degenerative.

The classification of diseases of the eye is now easy enough. They had no microorganisms, there was no anatomical details, no physiological exactitude and no ophthological ineptitudes to make them demure. The Dosha just produced diseases of the lid, fornix, conjectiva, cornea etc. "*Varthma Sandhi Sitham Krishmm*......" When a disease produces, what to us a complication, it was a different disease to them according to the offending Dosha. Thus they listed 24 diseases of the lid, 9 diseases of fornix and limbus, 21 to cornea and 27 varieties of cataract and so on.

This formidable list is grouped in manner so praiseworthy and in a language so sublime that we the inheritors feel a pardonable pride in our past achievement. Even so some of the descriptions of diseases are vague enough and at variance with the modern anatomical knowledge of structures. It is difficult for us to render all these in their corresponding modern terminology. That part, the classifications and their modern equivalents will be taken up at a later stage of this article and for our present purpose I shall start with Cataract. The name Cataract was of a recent origin in the West. The Greeks called it "*Cataractus Hipochyama Iridae*' and the Latin

writers called it '*Suffusio*' The pre and the post Hippocratic period knew no cataract. Celsus thought that cataract was a curable Glaucoma and even Galen held much the same wrong view and persisted in his ignorance. A sort of dicussion and controversy raged amongst the then Ophthalmologists and there were many Sir Rogers who will not give in gracefully till a young French Doctor, Qurre shamed his professional elders. Fortunately some of their discriminating ones took up the matter. Brissedu was almost the first to acknowledge the wisdom of that young man. Later Maitre-jan, Petit, Merry and others supported him in the 'Academic-Royal der-Science' and thus established the present conception of cataract. While this being so, our ancient India had classified 27 varieties of cataract based on their Thridosha conception.

III

In my previous article a rapid survey was made from the Ayurvedic and other texts about India's heritage in Ophthalmology and its engrossing expositions. In this brief article an endeavour is made to appreciate the extent and scope of our ancient lore and its comparative merits in diseases of eye and its treatment. We appreciate to-day over centuries old system not that we owe less to our ancients but that we owe more to our western knowledge on this subject.

Most of the references in this article are from Vagbhata for obvious reasons. Both Charaka and Sushruta do not deal the eye affections in the intelligent manner of Vagbhata and Vagbhata, a close student of those teachers went before him had the inimitable way of dealing this subject all his own.

Traversing the whole field of ancient Ophtalmology we find, that theirs was an attempt at descriptive nicities on external diseases, epigrams on symptomatology and empirical conceptions on treatment. A few examples may not be out of place here.

Chalayanvarthmini Vayurnnimashonmashanam muhuhu.

(Due to Vitiation of Vayu there is a painless and a constant winking). The beauty of this line is simply grand but it is impossible to diagnose the disease with this description. How this Vitiation of Vayu differs from other two diseases "Krichromeelam" and "Vathahatham" mentioned in that group where Vayu is the offending factor? Take another disease.

Kukoonakaha Sirorava dandhothpathi nimithajaha.

(At teething time babies get swelling of lids, redness, inability to open eyes, suffer from hot burning sensation, and rub their eyes and nose). What is this disease? Vagbhata calls it "Kukunakam" due to Vitiation of Vayu, Pith, Kapha and Blood. Of the 10 diseases mentioned in this combination how one Vitiation differs from another and how could we distinguish this from Trachoma "Sikak Vartmam"—a disease due to Vitiation of the same Vayu, pitha, kapha and blood—It is very difficult to appreciate the basis of these heterogenous grouping and I have not been able to get a rational interpretation in spite of my earnest endeavour and close association with teachers on the subject. Instances of this nature abound in every page.

In the Sidha system it is even worse. Of the 96 diseases of eye mentioned in Agastya Nayana Vithi, he attributes 45 to vayu, 31 to Pitha, 20 to Kapha and of these he very generously distributes 13 to diseases of conjunctiva, 24 to diseases of lid, 9 to limbus, 27 to Iris, 10 to Cornea and 13 to whole eye affections. This arbitrary aggregate number and its promiscuous distribution afford little scope for understanding the subject and I shall cite only 2 diseases as samples from this all useless Nayanavithi "Akira Rogam" in which the symptoms described are pain, epiphora discharge, flushed face and the second is "Ukira Rogam" in which the symptoms are pain, epiphora, burning and itching sensation, blurred vision and inability

to close the lids. I leave it to my readers to diagnose the diseases from the above description. A mere mention of some stereotyped symptoms generally found in good many eye diseases giving some name for a mass of verbiage reveal the unabashed pretentions of an unworthy writer of that unfortunate Nayana Vithi.

Even in the Ayurvedic texts this sort of conglomeration of names of diseases abound. We search in vain to see any mention of age, sex, site and other ætiological factors and descriptive details so indispensable in an analysis of eye diseases and these lamentable omissions of everything worth recording for a particular disease in a treatise like ayurveda which claims to have come from Brahma.

(Sutrastanum) by a man like Vagbhata who wrote this "Uttarastaaum" towards the end of his memorable work wherein he excels in art and beauty like Shakespeare in his *Tempest*, to say the least, is very depressing. In vain we search in all the ten chapters for his appreciation of eye affections beyond the external diseases and diseases of structures seen by naked eye. In vain we read all his innumerable exquisite lines starting with his 24 diseases of the lid 29 diseases of conjunctiva sac and carbuncle, 5 diseases of the cornea and the rest of it wonder at his ignorance on affections of structures beyond. The description of diseases not seen by naked eye is vague and equivocative type of verbiage for all conditions of ciliary bodies, retina choroid, optic nerve, upper and lower visual centers, etc. It is unreasonable to assume that he knew anything about intraocular tension and its dangers, visual fields and their significance, the science of optics and retinorcopic corrections, Phoreas and Fundus pictures. These and other features of our modern Ophthalmology were evidently not understood by any ayurvedic writer. It was not known to the Kashmir (?) Surgeon Charaka, the indomitable Physician Susruta or to the Buddist (?) Vagbhata.

But our ancients were pre-eminently superb on external diseases. In that their gift was generously bestowed and ungrudingly expressed in a language so wonderfully elastic. The prosody of Virgil or the poetic prose of Livy and others, though faintly still ringing in my ears, pale into significance before this Versatile Vagbhata's masterly expositions. Look at this :—

Pamsupoornamanothathwam Krischoonmeelanormashrucha.

(F. B. Sensation, constant winking, lacrymation, temporary relief by massage on lid).

And again for Phlyct. Conjunctivitis.

Sasilohitha Lahitha.

Thus the whole text is a treat full of pithy aphorisms and adept epigrams.

It is mostly in the treatment of diseases we find ambitious claims are advanced in ayurvedic and in other Indian systems. I am not concerned with this claim on the general diseases but I shall deal only as far as eye affections are concerned. Unlike our modern conception, ayurveda has no micro-organism as a causative factor in a disease and when a disease produces what to us a complication, is a different disease to them according to the "Kupita Mala" of Tridosha theory. We fail to see any mention of acute, subacute or chronic condition in a disease and each disease irrespective of its acuteness or otherwise is directed to be treated locally by "Dara", ghee compound and others and internally by administering particular combination for the offending "Dosha" of that disease—Take conjunctivitis.

Kushchvonmeeta pkranajpam draksha kalaambhusadhitham.

(Make a decoction of grapes in old ghee to which add sugar. Apply this to eye. Inhale through nose and take internally. Take granular lid affections—be it Trachoma, Spring catarrh or Follicular conjunctivitis.

*Kumbheeka Varthmalirivatham Srowndhwa-
vaprathi Saritham.*

Expression of the granules according to the given technique and apply the above combination to eye. The method of expression and other details are mentioned in extenso.

Liravethanivapathrirva Sakasophalicha.

I have tried this method in a series of over 50 cases of Trachoma extending over a period of 18 months with fairly encouraging results which formed my paper on this subject before the last All India Ophthalmological Conference.

For corneal opacities of various nature many combinations of drugs are given according to the "Dosha" and one of them in a particular group :—

*Thamalapathram Gothathasanka Phanosthi-
gardha bhamam,*
*Namramcha Warthirmoothrana Sarvasulka-
vinasini.*

(Leaf of Bilwa (?), Cows tooth, conch, sea phenam, bone of an ass, copper,—all in definite proportion and mixed with cows urine and make a stick and apply it).

Lenticular opacities of various degrees are arranged in a certain order and extensive treatment are enjoined for each stage and each degree of opacity.

Thimimkachatham Thathikarchopthantha;

For Endophthalmtis, Panophthalmtis, Blindless resulting from various causes and other eye affections with some operative procedures exhaustive details are mentioned under each heading. A resume of these various details with a faithful translation of the combinations of drugs and processes of treatment advocated for each of the manifold affections enumerated under each "Dosha" will be too voluminous for an article like this and I believe it ill serves our purpose here.

In conclusion I am happy to own that we Indians have a precious heritage in Ophthalmology dating from the Rigvedic period of 3,000 B.C. descending through Atreya Brahmam and Thaitreya Samhita periods to Sushruta age of 1000 B.C. and coming through Vagbhata to Sreekanta Datta period of 1,300 A.D. with 173 formulae of Sushruta employing about 228 drugs and 154 prescriptions with 204 drugs of Vagbhata and like combinations and accumulated wisdom and experience of old, handed down to succeeding generations, all these when compared with the grosteque hypochyme theory of Galen of cataract, the Sea-Green idea of SAMS-UL-DIN of Arabia for Glaucoma, Quarres' episode and his revolt against the stupid ideas for Lenticular opacities, Fuchs endeavour to study human eye only a few years ago—and when I look back to the hoary heritage of India and compare it with the too recent development of Ophthalmology of the West I am constrained to echo ? Virgil (from memory) "*Sunt rerum mentem mortalia tangunt* :"

In the words of Ovid.

Adspiciunt Superi justis mortalia oculis (from memory) let us hope that Gods above do look human endeavour with impartial eye and we Indians with the motto of "Solare inope" taking whatever valuable from whichever source advance the cause of relief to humanity and enhance the glory of India.

" Baldness is the sign of a man who came out on top.

But at the end it amounts to the same thing : you will have more of fall and less of hair to wash ".

A BRIEF HISTORY OF OTOLARYNGOLOGY

By

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Although Otolagy has been recognised as a seperate branch of medicine for little more than a century, the intricacies of aural anatomy attracted anatomists of every generation. Bartholomaeus Eustachius (1520-1574) is accredited with the first description of Pharyngotympanic tube connecting the middle ear and Pharynx. However according to Singer, Alcamaeon (about 500 B.C.) "discovered the tubes called in after years by the name of Eustachius." This author also points out that Aristotle (384-322 B.C.) refers to it in his writing and there is evidence that the two contemporaries of Eustachius, Vesalius (1514-1546) and Ingrassias (1510 to 1580) were acquainted with it. Aristotle proclaimed that all who were born deaf were consequently dumb. There was no evidence that Aristotle recognized the relation of speech to hearing or that dumbness was a developmental consequence of deafness and not a distinct pathology or organic condition.

To Sushruta (400 B.C.) is attributed the glory of plastic and rhinoplastic operations. In his text book of surgery called Sushruta Samhita there are two vividly written chapters on diseases of Nose and Ear. Dr. Hirschberg of Berlin says "The whole plastic surgery in Europe took a new flight when these cunning devices of Indian workmen became known to us. The transplanting of sensible skin flaps is also entirely an Indian method (Sushruta Sutrasthanam Ch. XVI). It is Sushruta who first succesfully demonstrated the feasibility of mending a split ear lobe with a patch of sensible skin flap scraped from the neck or the adjoining part.

The first monograph containing any reference to the diseases of the ear was by J. G. Duverney (1648-1730), Professor of Anatomy in Paris. It was translated into German in 1732, English 1748, and gave a clear account of the current knowledge. The foundations of Otology were the catheterization of the Eustation tubes through the mouth by Guyot 1724 and Cleland in 1741. Guyot was a post master of Versailles ; he invented the eustation catheter and used it to relieve his own deafness. The name of Antonio Valsalva 1666-1723 is familiar to every Otologist through Valsalva's method of inflation of the Eustasion tubes. The mastoid operations of Petit 1774 and Jasser threw more light upon infections of the ear. Cooper performed the perforation operation of the tympanic membrane for deafness. The first treatise on diseases of the ear was written by Itard 1775. John Cunningham Saunders founded in 1805 the London Dispensary for curing diseases of the Eye and the Ear which later became the Royal Ohpthalmic Hospital (Moorfields). He directed all his efforts to establish otology on a scientific basis. The first hospital exclusively devoted to diseases of the ear was established in 1816 by an unqualified practitioner John Harrison Curtis and it eventually was named the Royal Ear Hospital. Curtis deserves credit for the enterprise although he appears to have been "profoundly ignorant even of the anatomy of the ear", and treated all cases by syringing—using an enormous instrument like a garden syringe.

To James Yearsley 1805-1869 goes the credit of being the first to point out that deafness may arise from the affections of nose and throat. He was the first qualified medical man to practice Otolaryngology as a specialist in London. He founded the

Metropolitan Ear & Throat Hospital in Fitzroy Square in 1838. He was the originator of the Medical Circular and Medical Directory.

Joseph Toynbee 1815-1866 was a native of Lincoln Shire who began his career as an Assistant Curator to Professor Owen at the Royal College of Surgeon. He made over two thousand dissections of the ear, many of which are described in his book on Diseases of the Ear. He described Colestitoma. His dissection proved that organic stricture of the Eustatian tube was a rare condition. He was the first to recognize ankylosis of stapes in 160 cases. He recognized that Otitic infection could extend upto the brain by way of labarynth and though he never performed a mastoid operation he mentioned that it might be considered. In 1851 he was apointed Aural Surgeon to St. Nary's Hospital, the first General Hospital to set aside beds for thc diseases of the Ear. His death was the result of an experiment on himself. Believing that tinitus can be relieved by inhalation of chloroform and subsequent inflation of the ear he subjected himself to the test. He was found dead in his consulting room, his notes and his apparatus by his side. He may be regarded as the founder of the modern otology. He successfully used the first artificial tympanum.

Adam Politzer 1835-1920 for many years occupied the Chair of Otology in Vienna to which he was appointed while still under 30. He contributed to every department of Otology. He was the first to obtain pictures of membrana tympani by illumination which he afterwards illustrated in an atlas of 14 plates and 392 pictures. As a teacher his influence and popularity were immense. He could teach with equal fluency in German, French, Italian or English and his clinic attracted medical men from all parts of the world. His "Lehrbuch Der Ohrenheilkund 1878" contiuued through many editions and remained the standard book on Otology for many years. He lived to the ripe age of 85 retaining to the end his interest in otology as is shown by the publication a few years before his death of " Geschichte Der Ohrenheilkunde" which is a masterpiece of of historical research.

Treatises on ear were written by Anton Friedrich, Von Froltsch 1866, Lawrence Turnbull 1872, Sir William B. Dalby (1873) and St. John & Roosa 1873, and Friedrich Bezold 1906.

Max Schultze described the nerve endings in the labarynth 1858, Helmold described the mechanics of the ossicles and membrana tympani in 1869 and Goltz the physiological significance of the semicircular canals. In 1892 Julius Richard Ewald studied audition in birds deprived of the labyrynth and Stanislave Stein, the functions of the separates parts of the labyrynth. The transmission of sound through the cranial bones in the diagnosis of aural diseases was first studied by Johann C. A. Lucae 1870 and great advances in exploration were made by Fredrich Bezolt. Bezolt gave the first clear description of mastoiditis and introduced new tests for audition in deaf-mutism and in unilateral deafness. Among other advances were Weber and Rinnetesis, Sir Francis Galton's whistle for determing the superior limits of audition. Sir Astley Cooper and Sir William Wilde were the pioneers of aural surgery in 19th century and after their time the most important English work on the subject was that of James Hinton 1827-75 of Guy's Hospital. He was Toynbee's assistant and successor in practice. Hinton is remembered as a philosopher and his little book on the mystery of pain is still read. Nevertheless his work on Otology, "The Questions of Aural Surgery," is full of original ideas. He was the first to perform operation for mastoiditis in England. Although the modern surgery of the ear and mastoid has been mainly the work of Germans, Mastoid surgery was placed upon a sound

pathological basis in 1837 by Hermann Schwartze and Adolph Eysell. This operation was further improved by Emanual Zanfal and Ernst Kuster while Ludwig Stacke introduced the excision of ossicles and greatly improved the surgery of the middle ear.

Contemporary with Toynbee was Sir William Wilde of Dublin, the father of Oscar Wilde and a man of great energy and varied gifts, an authority on history and archeology of his country. He wrote several works on this subject. He settled in Dublin as an Aural Surgeon in 1841. He established a dispensary in a disused stable and later in St. Mary's Hospital. He was the first to teach Otology in United Kingdom. His volume on Aural Surgery was the fruit of long and careful clinical observation, for Wilde was as essentially a clinician as Toynbee was a morbid Anatomist. He treated Acute Mastoiditis by "Wilde's incision" an incision down to the bone but with no bone operation. He realized the dangers of otitis stating that "we can never tell how, when or where it will end". Aural vertigo was first described by Prosper Meniere in 1861; was again noted by Charcot as vertigo abaure Lease, while the relation between nystagums and vestibular or cerebellar disease has been noted by Purkinjee and Fluronsa and have been developed in 20th century by Robert Bhany. On the continent the pioneer of modern otology was Jean Marie Gaspard Itard, a military surgeon of Paris who devoted special attention to the ear and whose work did much to establish otology on a scientific basis (1775-1858). He did good service by his efforts to improve facilities for the education of the deaf. In this direction the first efforts at regular instruction of the deaf were made by the Spaniard, Pedro Ponce de Leon in 1578. In 1876 Kassel attempted to remove the stapes with the idea of replacing its foot plate with a movable cicatrical membrane. In cases of otoscrosis, this method is doomed to failure because the two crura of the stapes were often fractured thereby interfering with the removal of the foot plate. The risk of infection after opening the labarynth by that method was considerable and the technical difficulties before the introduction of local anaesthesia and adrenaline were indeed great. Twenty years later Passow attempted to follow out the same principle of substituting a movable membrane for the fixed stapes plate by drilling a new opening in the promontary with a trephine. By this method Passow succeeded in producing improvement in hearing immediately after the operation but this improvement lasted only a few days and the risk of infection was evident. Opposition to these attempts were emphatic and general. At the Congress at Rome on 1894 such leading Otologists as Politzer, Moore, Cozolino condemned the extraction stapes as futile and dangerous. Ten years later Banoy from the basis of his well known theory regarding the function of artificial drum membranes suggested the establishment of labyrynthine fistula in the posterior verticle semicircular canal. But the result was extremely transitory. A suggestion of Foderus to establish a sound fistula in the Promontary and cover it directly with Thiersch's skin graft never materialized owing to the technical difficulties involved. In 1917 Holm Gren suggested the covering of the fistula at the operation with a thin movable membrane to maintain the original improvement in hearing. In 1920 Holm Gren inaugurated a new technique which was reported in the Oto Rhinological Congress in Paris. The operation was performed with the aid of magnsfying instruments Gullstrand's Zeiss Lens and Zeiss Binocular microscope. This technique has now been generally accepted. Sourdelle's interest of surgical treatment of otoscrosis was roused by Holm Gren's lecture in Paris and both of their observations in a number of cases. It was noted a few years after operation that the operated ear—the worse ear was chosen always for operation—became the better ear. This was interpreted

as an indication that hearing diminished and deafness progressed more rapidly in the non-operated than in the operated ear. The concept of fenestrating the ossious labyrynth is not new after the profession discarded extraction of the stapes as the answer to the problems concerned with deafness in patient suffering from otoscrosis. Only Holm Gren. continued his pioneer work in this field. Sourdille in 1937 presented a technique in which an operation for fenestrating the ossious labyrynth was carried out in three stages.

Lempert in 1940 devised a technique compressing the three stage procedure into one stage operation.

While otology thus progressed Laryngology and Rhinology were specially advanced by the introduction of laryngoscopy by Benjamin Babington 1829, Robert Liston 1837, Manuel Garcia 1855. But Hippocrates first described the symptoms of tuberculosis in the 5th century B.C. Babington of London 1827 exhibited before the Hunterian Society a combination of two mirrors similar to form and performance to our present laryngoscope. He named it the Glottiscope. This instrument was claimed by several advocates for Doctor Babington served in the same capacity as the *laryngoscope of Manuel Garcia.* But there is no record of results of physiological observations nor cases reported in which it has been of service. Beaumes of Lyons 1838 used a mirror attached to the slender shaft of a whale bone. There is no record of original observations. Liston of London 1840 used such a glass as used by dentists. Warden of Edinburgh 1884 substituted prisms of glass for mirrors but these were too bulky to make observation though he claimed to have seen the glottis in two instances. But while the principles of laryngology were in the making by these earliar investigators it remained for Garcia to actually correlate the laryngial mirror in its mechanical performance to the revelations first seen by him in the action of muscles in and about the vocal cards and to draw his valuable conclusions of vocal physiology, to disprove theories and hypothesis concerning the functions of these organs and to establish new and definite pathways towards diagnosis and treatment of diseases of the larynx. His observations are classic and really constitute the foundation stones upon which modern laryngology has been built. In his "Obser vation on the human voice" read before the Royal Society by Professor Sharpey in 1855 Garcia states his *modus operandi*. "The method which I have adopted is very simple. It consists in placing a little mirror, fixed on a long handle suitably bent in the throat against the soft plate and the uvula. The party ought to turn himself towards the sun so that the luminous rays falling on the little mirror may be reflected on the larynx. If the observer experiments on himself he ought to do so by means of a second mirror to recieve the rays of the sun and direct them on the mirror which is placed against the uvula.

Since then laryngoscopy or examination of larynx by a small mirror and reflected light gave the scientific world an intense and unusually strong impetus. It has developed the entire laryngology both in diagnosis and treatment to its present high degree of perfection. Laryngoscopy was introduced in New York by Ernest Krakowizer of Vienna who was the first physician in America to demonstrate the vocal cards. Suspension Laryngoscopy was introduced by Killien in 1912. A perfected method of photographing larynx was devised by Thomas Rushmore French in 1884. Important early treatises on larynx were those of John Cheyne & William Henry Porter. Trousseau and H. Bellack contributed on laryngial pathisis, chronic laryngitis and disorders of the voice.

Horace Green 1802-1866 wrote on diseases of air passages; Samual De Gross on foriegn bodies in air passages. Sir Morrel Mackenji was one of the first in Britain 1837-1892 to

explore this area. He founded the Throat Hospital in Golden Square in 1863 and he wrote an excellent book on laryngial tumours. Mackenji had studied under Czermak in Vienna and on his return had been awarded the Jacksonian prize of the Royal College of Surgeons for his essay on Diseases of the Larynx. He conducted a large practice in London though his career was clouded by the misunderstanding which followed his attendance of the German Emperor Frederic, the III. The historic case of the cancer of the larynx focussed attention on laryngology. Bryson Deleven says the sciences of Laryngology & Rhinology were placed on a firm literary basis through the three treatises of J. Soliscohen 1872, Sir Morrel Mackenzy 1880, and Francke Huntington Boswort 1881. Intubation of the larynx in group was introduced by Eugene Bouchet in 1856 and first done in Paris in connection with the Fachiotomy by Troso and perfected through the conscientious labours of the selfsacrificing Joseph P. O'Dwyer 1841-1898 whose name stands with those of Semmeluies and Crede as one of the great benefactors of Infant Life. Charles Henry Ehrmann was the first to remove a laryngial polyp (1844.) Victor Von Bruns 1812 and 1813 first enuchated a laryngial polyp by bloodless method and was the pioneer of laryngoscopic surgery. Rodolf Voltolini first employed the galvano cautery in 1867 and performed the first laryngial operation through the mouth with external illumination. Sir Felix Semon (1849-1921) who was an eminent laryngologist of Lodnon was a German by birth. He did much to raise the status of the speciality. He stated the law governing the site of immobilization of the vocal cards in complete and incomplete paralysis of the recurrent laryngial nerve. In 1832, the explorer Jorege Catlin published his classic on mouth breathing based upon his observations on nasal obstruction in North American Indians. Benzamin Lovenberg was the first to consider the nature and treatment of ozena and Ludwi Grunwald was the first to use surgical treatment on nasal suppuration and diseases of Ethmoid and sphenoid. The operations on the nasal septum was perfected by Robert King, Kilien & Otto T Frier. Killin also originated the radical operation for chronic inflammation of Frontol sinus Sir St. Clare Thompson & Chevalier Jackson have contributed much towards the treatment of laryngial cancer.

A new offshoot of laryngology per aural endoscopy was started by Killin who was the first to view the lower air passages and oesophagus. The possibility of introducing straight tubes into the oesophagus no doubt arose from the knowledge that sword swallowers could place the head and neck in such a position that the food passages became approximately a straightline. Once it was established it was possible in any patient then oesophagoscopy was assured. The first examinations were made by means of tubes slightly conical in shape and the lumen of the tube then being viewed in a laryngial mirror. The first direct examination of the oesaphahus is said to have been accomplished by Kussumal in 1868 using a urethroscope specially elongated to a length of 43 cms. He was able to see a carcinoma of the thoracic oesophagus. Mikulicz designed an oesophagoscope consisting of a tube into which he passed an optical apparatus with proximal illumination. Einhorn designed an oesophagoscope with an axillary tube for the light. In 1902 Killian used oesophagoscope for the removal of foriegn bodies and showed a large pointed bone removed from the oesophagus of a woman aged 79. Horace Green discoverd the law of tolerance of larynx to the presence of a foriegn body. From the work of Green & O' Dwyer were established the fundamental principles in the evolution Bronchoscopy. The principles of oesophagoscopy were soon used for the direct inspection of the larynx, trachea and bronichal tubes. Killian showed that large bronichi have thick solid walls supported by cartilage, that they have a high degree of elasticity and most

important of all that they are movable. He demostrated in 1902 the necessity of having side-openings in the lower end of the bronchoscope to enable the patient to breathe with one lung while the other bronchus was being examined. He was greatly assisted in his work by the inventive genius of Burnings who perfected a handle containing a powerful electrical light which could be reflected and focussed down the bronchoscope tube. Killian has been rightly styled the father of direct Bronchoscopy. In 1904 Chevalier Jackson combined the distal lighting principle of Einhorn oeophagoscope with the tube of Killan. To Jackson must be given the credit for the great impetus given to endoscopy in the early part of this century.

Due recognition must be given to the work of Negus who has designed a special endoscopic operatng table and greatly improved lighting principles for histubes, the latest of which combines the distal and proximal light in the same tube.

In the 20th century the surgery of deafness took a new shape although the idea of penertrating the labyrynth was not new. Lympert after considerable work improved Holingren and Soundelle's ideas by improving the technique of operation on the labrynth into a one-stage operation.

Recently Rosen brought back the once discarded idea of mobilizing the foot plate of stapes in which he showed considerable benifit. The mobilization operation is not a bar for fenestration later on the same ear.

Meanwhile Zollner has introduced his Tympano plastic surgery which is both for improvement in hearing and as a cure for suppurative otitis media. The field of operation thus steadily extends from day to day. The discoveries and work of our time will be found in the works on history (not yet written) which will be read by our children and grandchildren.

The specialization in medicine is still advancing, medicine and surgery have become so highly specialised in recent years that the old fahsioned general physician or general surgeon may hardly be said to exist although of course the general practitioner remains the backbone of the medical profession.

Teacher : "Tommy, what does F-E-E-T spell? come on, Tommy, I'll give you a hint—the cow has four of them, and I have only two ".

Tommy told her and that was why he was expelled from the school.

—(*Vic Frederics "crackers in bed"*.)

* * *

Saddest words in English Language: "Explain the joke".

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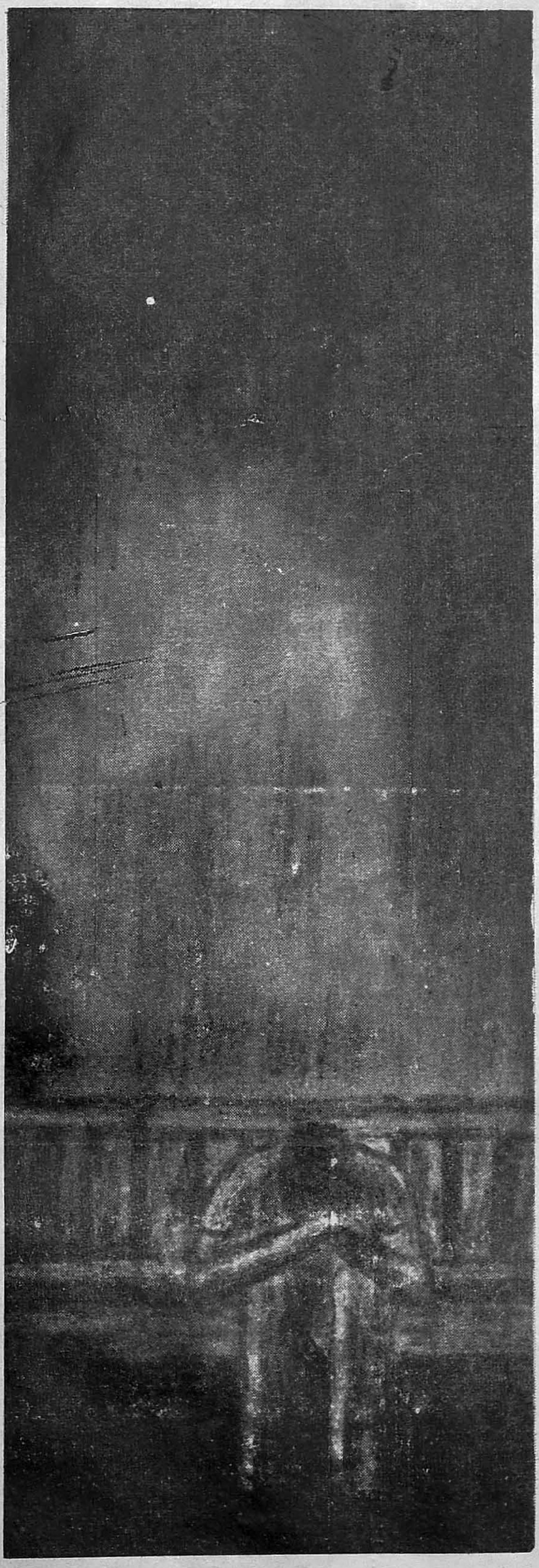


A MOHAN RAO

A Tear Drop

By

A. MOHAN RAO,
IV Year

From the depth
Of a haunting loneliness
And a hopeless hope,
A pain red wave of pain
Crept into my heart.

And on my eye
A tear trembl'd, trembl'd,
trembl'd . .

And Fell,
Like dew from the lip of a leaf.

* * *

And the soft splash was lost
In the tragic wail
Of a lost soul.

GRADUATES' RECEPTION DAY

R. GOPALKRISHNAN

Hon. Gopal Menon speaks
....Oh, you serious faces....

R. GOPALKRISHNAN

English Skit
....keep away from the madding crowd...

R. GOPALKRISHNAN

Dance by Miss Radha, *I Year*
....while Beauty passes with dancing toes...

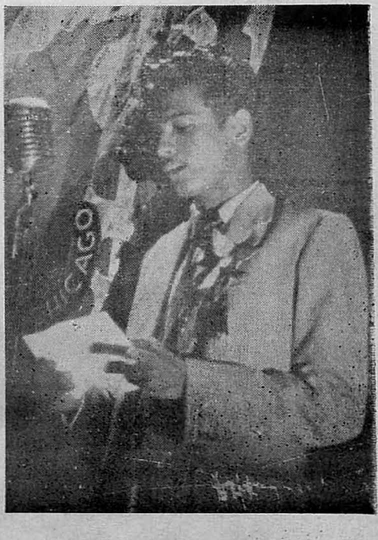
R. GOPALKRISHNAN

Song by Miss Shantha, *I Year*
....fill this little flute of life with melodies eternally new...

R. GOPALKRISHNAN

Song by S. Vasudevan
...And close your eyes and listen; the song is a memory quivering in the air, crying over life... Tremulous, sweet and sad...

R. GOPALKRISHNAN



Vote of thanks by the Arts Sec.
...and Tamam Shud...

A General Survey of the History of Nursing

By

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There could be probably no more dramatic or moving story that could be told than that of the long line of nursing pioneers, men and women who have built into the profession its finest ideals and have overcome tremendous obstacles in making nursing what it is to-day. It is not possible to tell effectively the thrilling story of a profession such as nursing which is as old as humanity itself, in the few pages of a journal ; However, an attempt has been made here to give a bird's eye view of nursing history.

The development of nursing has been influenced to a great extend by the political, religious, social and economic conditions of the various countries. The fall of the Roman Empire, the Renaissance, the Reformation and the emancipation of women were all turning points for nursing. In no other field has the emancipation of women been of greater or more practical importance. The great wars were especially significant. If it had not been for the Crimean War which called Miss Nightingale into action, there would not have been a "LADY WITH THE LAMP" to be remembered through the ages, and what we pride as "Modern Professional Nursing" to-day might have been still beyond our reach. These wars were indeed a blessing in disguise.

With this summarizing statement in mind, let us trace the development of nursing in more detail. We cannot but accept that nursing must have had its origin with the beginning of life itself, although very often we search in vain among historical records for a definite account of such work. It was the women of the home who looked after the sick, the aged and the helpless, and nursing was a household art. Treatments such as counter-irritations, blistering and massage which are still in use to-day were practised even among primitive people although the purpose was different. The general belief was that disease and death were caused by evil spirits, and every treatment attempted was to drive out the demons. Despite these crude ideas, there still existed virtues of kindliness and hospitality, and the sick were treated with affection and care.

As civilization advanced, community care was provided for strangers in the public inns which latter on became the earliest hospitals. There is no mention of any nurses in these institutions. Then, with Christ's teaching of love and brotherhood, the women of the early church began organised work among the poor and the sick. One of these first deaconesses was Phoebe,, who is known as the world's first visiting nurse. There were also learned wealthy Roman ladies who devoted their time to the care of the sick and built hospitals and monasteries. During the invasion of Roman Empire, by the barbarians, these monasteries were the only places where medicine and nursing were protected. Nursing was carried on by monks and nuns and some of the traditions found in schools of nursing to-day can be traced back to have originated here.

This brings us to the beginning of the 12th century when the whole Christian population was set into motion by the Holy wars called the Crusades. Many hospitals were built and

a number of male nurses undertook the care of the sick and wounded Crusaders. Though, the crusades were considered tragic in themselves, the wide travels made by the soldeirs brought new ideas and a longing for freedom and progress. The aristrocratic attitude found in the military groups and the strict rules of the monasteries did not appeal to the people any more. The church was also failing in its teaching. The situation could only be relieved by a new type of order which would be a protest against the cloistered life of the monasteries and the exclvsiveness of the aristrocratic orders. In order to meet these new social conditions and specifically to relieve those who were suffering from Leprosy, St. Francis of Assisi formed a group of friends who gave up all their wealth and lived by begging and came to be called "the Order of Mendicants". We have also other attractive examples of nursing Saints, St. Catherine of Siena and St. Elizabeth of Hungary, who did not identify themselves with strict religious orders but performed the task of serving the poor as private individuals with much devotion.

Before very long, there was a complete change of the whole picture, with the protestant revolt and the Renaissance of the 16th century. The old monasteries were breaking up and even the new enthusiasm with the mendicant and secular orders was fading away. The rebirth of science, brought medicine out of its long period of lethargy but nursing entered a period of deterioration. This period is suitably called "The Dark Ages in Nursing". The hospitals were taken over by the civil authorities and servant nurses were employed to replace the religious sisters. They were exploited miserably as cheap labour by the hospital and were wonderful examples of all that a nurse ought not to be. Being mostly ignorant, dishonest and often drunken and immortal women, they had no dignity, intelligence or skill, Charles Dickens has depicted beautifully a picture of this type of nurse in "Sairy Gamp." who was usually dreaded and avoided by people. The only bright spot in this period was the labour of the few religious groups of women.

Towards the end of the eighteenth century we begin to catch a gleam of light again. The ancient order of Deconess' was revived by Pastor Fliedner and his wife, who enlisted a better class of women for training and gave them planned instructions and practice. Other social reformers like John Howard and Elizabeth Fry improved the conditions in prisons and hospitals. Finally a new life came into the profession with the work of Miss Nightingale, the heroine of Crimea. Her youthful interest in nursing, led her to study the social conditions and the work of nursing groups. A conviction grew that she would some day have her dreams come true. The outbreak of the Crimean war with its inefficient English Nursing set the stage for her pioneering work. It was not by any means an easy task. The British Medical officers were not easy to deal with and the hospitals were found in most horrible conditions with no laundry, no supplies and no proper food. The death rate ranged between 50% and 60/.

Under Miss Nightangle's untiring energy the death rate fell considerably. Before very long the young nurse won the admiration of the soldiers and the Medical officers. It is said that many a soldier stooped down to kiss this angel's shadow as she passed by during her nightly rounds in the long wards of Scutari. Against great opposition she laid down the rules for the profession, demanding high qualification of mind, character and careful training with adequate theory and practice.

Miss Nightingale's great work and the founding of a new type of School of Nursing at St. Thomas' Hospital, London, brings us to the era of modern nursing. A new standard of humanity and scientific efficiency was growing up and there was a rapid expansion of hospital work and training schools for

nurses. The nursing field broadened out into many new branches and educational standards were gradually built up. Towards the end of the 19th century there was a new battle to be won and this was to attain self-organization for nurses. It became clear that the young profession had to bring together all its members to share their professional, educational and economic problems. A great achievement was made by Miss Fenwick of England, in establishing, the international Council of Nurses in 1899 which was one of the first International Organizations for women.

Many fields of work are open to the nurses at the present time. Public health nursing is perhaps one of the most attractive jobs. The Army, Navy, Red Cross, mines, industries and hospitals need specialized nurses. The education of nurses is gradually improving and people have begun to consider nursing as an applied science. It has taken centuries to develop nursing from a simple handicraft to a fine art and to-day we have nursing courses given at a collegiate level. Yet we have a long way to go. Even with the finest quality of human material, it takes long and careful preparation to produce good nurses and so the number of people with such merit is never large.

In our own country the introduction of professional nursing has been vey slow because of the pattern of our culture. The caste system, early marriage, lack of education and the purdah system have been retarding factors in the advancement of nursing. Gradual changes were brought about by missionaries, the armies of the invading powers, the traders and more recently the philanthrophic foundations. The earliest attempt to train nurses in India was in 1854 at the Madras Hospital and the first training school for nurses was opened in 1886 at the Cama Hospital, Bombay. To-day there are many schools attached both to the Government and Mission hospitals but these are yet few to meet the needs of the country.

Before concluding, a reference is made to the historical relationship between nursing and medicine as it would be of interest, especially for those in the medical profession. It is not very surprising to observe that nursing and medicine have always been most intimately allied. Both grew from much the same roots, but later they responded to different kinds of stimulation. Medicine flourished during the period of scientific advancement in the 16th and 17th century but nursing seemed to follow more closely the waves of religious awakening and humanitarian effort. Modern nursing developed as a separate vocation and it is not a subcaste of medicine or a "hand maid of medicine" as it is still thought by some people today. It is a relationship neither of independance nor of dependence, but one of interdependance.

The story of nursing has been an inspiring one and though nursing is in the upward trend now, the goal is still a long way ahead. Nurses have still much history to make. Not till every sick person is efficiently nursed and every life is safeguarded from preventable dieseases can nurses afford to relax their efforts. If the nurses of the future work steadfastly with loyalty, courage and love and hold before them the vision of what nursing can be, as faithfully as their sisters of the past have done, they really will reach their goal some day.

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A SHORT HISTORY OF VENEREOLOGY

By

SAMUEL CHERIAN, Final, M.B.

Veneral diseases—diseases of Venus! Perhaps the goddess of love in her heavenly abode a top Olympus will be a trifle shocked at what we ascribe to her. But then, she might also be justly proud of what her disseases have achieved through the centuries in mortality, morbidity and human tragedy. Hundreds of thousands of men, women and children have been blinded, maimed scarred and killed to satisfy what might be termed Venu's lust for blood. How far Venus is responsible for all this havoc we do not know and we cannot take her to task since we ourselves are responsible for what happens to us.

Of the six odd venereal diseases now recognised, two have been outstanding and widely prevalent—Syphilis and Gonorrhoea. In every way, except in the mode of transmission the two diseases are poles apart While gonorrhoea is an acute fulminating attack, burning itself out in the course of a few days, the other is a smouldering fire, suddenly bursting forth in the form of an aneurysm or paralysis. In history too, syphilis far outstrips gonorrhoea in glamour, personality and quality of patronage.

In the year of grace (or should we say disgrace ?) 1493, Christopher Colombus returned in triumph to Barcelona. On board his ships were gold, pearls and other precious things, gifts to his king, and syphilis – gift to the people of Europe—his king to include himself if he wished. Of course nobody knew it by that name then. As it spread, each country gave the other the honour and privilege of having the new disease called after it. The Italian called it the French disease; the French called it the Italian disease; the Russians called it the Polish disease; the English called it the French disease and so on. For some reason the French bore most of the blame until in 1530, Girolamo Fracastaro, poet, pathologist and physician published his poem, "Syphilis sive Morbus Gallicus". Its hero was a shepered named Syphilis who gave his name to the disease which for five centuries has ravaged Europe and the world. Its theme was Syphilis as it was known then. We know so much more about it now. But Syphilis continues unchanged, unperturbed, as eternal as the stars and the skies, and it will always be with us as long as there are men and women in this world and they continue to be what they are.

Well, as far as Syphilis was concerned, it was "Veni, vidi, vici". Circumstances, greed of men and their foolishness helped the spread of Syphilis to a much greater extent than the prostitute. King Ferdinand of Neapolitans against Charles VIII of France who was making a claim for the kingdom of Naples. With the army came a consignment of Syphilis, in the form of some when who had crossed the Atlantic with Colombus. Whaever the army did or did not do, the consignment did very well. Many battles were faught, won and lost but all said done, neither side won; but it was a brilliant victory for Syphilis. How this came about is expressed in the words of John Astruc, physician to Louis XIV of France. He says "......and therefore it is by no means strange that many of the Neapolitans should be infected with the same Distemper as they served under the same colours and had to do with the same women who followed the camp. And for the same reason, the contagion would not but soon be communicated to the French by one or both of them, for as the success of the war continued doubtful, the same

towns were taken and recovered by both parties, 'tis plain, the French also must have had communication with the same women who had lain with Spaniards and the Neapolitans and the seeds of the Venereal Disease must have naturally passed from one to the other.,'

Three years later, the war ended, not due to any superior fighting ability of either party but due to the death of Count Gilbert not of syphilis though, who had been left in charge of Naples by Charles VIII. When he died, his army was broken up and expelled from Naples. The men who had been collected from all over Europe returned home. Their return journey was, as Syphilis was concerned, an Oddessy. Their trail was marked by men and women, maimed, scarred, paralysed, insane—without a home and without a country—unwanted, uncared for. They died by the thousands and their bodies lay rotting by the roadside and nobody cared, for everywere people were driving out infected persons from cities, villages and from all human company. Some of them were thrown into the river, others burned or driven out. But nobody wanted them.

From the poor, half-starved sailor who first brought it to Europe, Syphilis, like a faithless mistress favoured royalty and poverty by turns. Among the distinguished galaxy were included King Henry VIII and his son Edward VI of England, Louis XIV, Henry III of France, Ivan the Terrible of Russia and perhaps Pope Alexander VI. The great voyagers of the 15th and 16th centuries helped to disseminate Syphilis all over the world. Within the short space of about eighty years it had spread as far as China and Japan. Vasco da Gama, brought it to India in 1498. The Europeans took it to China in 1505. The Jews driven out by King Ferdinand took it to Africa with them.

It is interesting to find out what the medieval physician thought was the cause of this illustrious disease. The very name "venereal", ascribed to it a divine or cosmic origin. Some thought it was due to cannibalism, others thought it was due to bestiality and the eating of lizards. Wearing of linen shirts which had just come into vogue was blamed by some as the cause of Syphilis. Two observers Augustus Hauptman and Christian Langius thought it due to "a School of little, nimble, brisk, invisible living things of a very prolific nature, which when once admitted increase and multiply in Abundance; which lead frequent colonies to different parts of the Body; which inflame, erode and exulcerate the Parts..." But these men were so for ahead of their times that nobody paid any attention to them.

The early part of the 20th century saw the development of what one might term Spyhilology. In 1903, Metchnikoff, the Russian biologist and Roux succeeded in transmitting syphilis to the higher apes by inoculation. The one great difficulty with experimental Syphilis was the difficulty in obtaining a suitable experimental animal. Only the higher apes responded to inoculation by a reaction similar to that in man. Even the elosely allied monkeys did not respond. This work which Metchnikoff started was completed by Hoffman and Schauddin in 1905. Using a special microscopic technique called dark ground illumination in which the microscopic field is illuminated horizontally at right angles to the line of vision they discovered the organism causing Syphilis. They named it Spirocheta pallida—the colourless spirochete.

Attempts to treat Syphilis started quite early. They started out as usual with charms and the rest of the paraphrenalia and went on to mercury. That indeed was a picturesque era. Treatment was done on a mass scale. The patients were coated with mercury, stacked one over the other and heated in an oven;-well, at the end it amounted to the same-thing. The rich ones were heated separately in single ovens where they could sit and sweat it out looking at slogans such as this: "For half

an hour's pleasure, a lifetime of misery". If the patient did not die of the disease, he died of the treatment.

In the early part of this century Ehrlich introduced Salvarsan which proved efficacious but had too many side reactions. Later on came Fleming, Florey and Penicillin. The rest of the story is common knowledge.

So much for Syphilis; what about Gonorrhoea? As already stated, it has none of the historical connection that syphilis had. Of course, many persons who suffered from Syphilis must also have suffered from Gonorrhoea; but it has always been with us, right from the ancient times when Adam and Eve were frolicking in the garden of Eden and nobody seems to have taken much notice of it.

Through the centuries it has come, like the sun and the rain and the sand, little altered by the passage of time. The organism causing it was discovered by Albert Neisser in 1879. Till recently we had no specific treatment for Gonorrhoea. Penicillin has once again come to our aid and now any one can get cured of Gonorrhoea just for the asking,—for Penicillin, of course.

These diseases have taken their toll in broken homes, hearts and bodies. Wherever they have had a hold there has been tragedy. Perhaps the greatest tragedy is that of John Hunter, who inoculated himself with pus from a case of Gonorrhoea and developed Syphilis. From this he came to the erroneous conclusion that both were different manifestations of the same disease. Unfortunately the patient from whom he had taken the pus was suffering from both the diseases. The idea was wrong, but that spirit is there and as long as it is there, we will not lose our fight,—come wind, hell, or high water.

"Before I heard the doctors tell
The dangers of a kiss,
I had considered kissing you
The nearest thing to bliss
but now I know biology
And sit and sigh and moan,
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And I thought we were alone"

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PREVENTIVE MEDICINE THROUGH THE AGES

By

DR. M. K. JACOB, M.B.B.S., D.P.H.

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Man's battle against communicable diseases has been an important part of his struggle for survival and it is only within the past century that he has been able to turn the tide in his favour.

The primitive man thought that disease was caused by evil spirits. Under this concept curative medicine consisted in placating the evil spirits by sacrifices and preventive medicine in the use of charms and magic substances to keep the demons away. This practice of wearing charms prevails among some people even today.

Hindu medicine reached a high stage of development both on the curative and preventive side as early as 1500 B.C. The teachings of Hindu medicine on the preventive side was based on religious observances and had great practical value. Elaborate rules for personal hygiene, cleanliness of body, care of evacuations, restriction regarding sexual intercourse etc., are found in the religious texts of the period.

So also Egypt's hygienic code was enforced by religious ordinance and was universally observed. What is known as Mosaic law is essentially Egyptian in origin.

The way to a new basis of medical practice was showed by Hippocrates (460-370 B.C.), by developing clinical observations and diagnosis. There is no direct indication of the practice of preventive medicine in the Hippocratic doctrine. All the same, the Hippocratic principles constitute the basis on which preventive medicine has been built up, for it was during this period that the influence of diet, climate and exercise on health were carefully examined.

The century following the birth of Christ saw the appearance of Galen (130-201 A.D.) who collected together the scattered elements of Greek medicine and embodied them in a permanent form. He established the experimental method and his teachings dominated medical thought till the 16th century. During this period no significant contribution to the study of disease seems to have been made.

Growth of preventive medicine during the period was characterised not by new knowledge but by the development of social defences. The manor and the monastry formed the dominant socialising influence and taught cleanliness in an unclean age and the elements of hygiene at a time of no hygiene. The church taught that the care of the sick and the poor was a pious duty.

The liberation of the European mind from the domination of the Galenic doctrine over medical thought started with the Renaissance. Some of the pioneers of change in medical thought were Paracelsus (1493-1541), Leonardo da Vinci (1452-1519), Linacre (1460-1524), Harvey (1578-1657), Sydenham (1624-'89), Morgagni (1682-1717), John Hunter (1728-'93) and Virchow (1821-1902).

Paracelsus first called attention to industrial disease and Ramazzini (1633-1714) studied the effects of occupation on health and evolved methods for avoiding them.

It was in the 19th century that experiment reaped the richest harvests of medical science. With the advent of Pasteur and Koch and the rise of Bacteriology following the discovery of specific causes of diseases, the confusion concerning the nature of many diseases was ended. A harvest of discoveries in

insect transmission of Manson, Rose and others paved the way for the control of malaria, filariasis, yellow fever, typhoid and a host of other diseases. And now the development of insecticides such as DDT, Gemmexane etc., give us fresh hope that in the years to come the fortunes of battle will turn to man against the insect.

The wonderful discovery by Jenner in 1796 that vaccination with cow-pox virus would prevent small pox laid the foundation of immunology long before the discovery of microscope as the causative agents of disease. Contributions of Louis Pasteur to Immunology were based on an application of this principle. From these beginnings the science of immunology has developed so vastly that we know in some detail the nature of many immunising processes. Immunisation against small pox, diphtheria, whooping cough and a large number of other diseases has enabled the physicians to reduce the number of deaths from many communicable diseases to a fraction of what they used to be. The role of chemotherapeutic agents particularly the antibiotics in the conquest of diseases requires special mention.

The systamatic application of certain community efforts have had some effect on the prevention of diseases. Some of these methods are :—

i. Provision of safe water supplies.
ii. Development of sanitary methods of waste disposal.
iii. Slum clearance and housing programme.
iv. Provision of adequate food supply and education of the people on nutritional requirements of the body.
v. Development of community facilities for recreation.
vi. Control of insect pests.
vii. Population control.

In the fluctuating fortunes of war against disease victory has led us to the present times when large parts of the globe are free from epidemics of devastating severity. With the conquest of communicable diseases we have extended our fight to include non-communicable diseases as well, and we are becoming more and more interested in positive health. In the programme of prevention of disease and promotion of health, the WHO has done pioneer work and are helping the under-developed countries to come to the level of the more advanced nations.

PRISON FANTASY.

" The reality that surrounds us prisoners is so unpleasant that we retire at every opportunity into realms of make-believe. One day five of us were sitting in the prison yard when one of the guys looked at an ad in a magazine. " Wish my mother had a home like that," he said, pointing at a little red brick bungalow with a green roof and shutters. One of the other fellows took the magazine and flipped the pages. " *That's* what I wish *my* ma had. A car, so she could come and see me once in a while."

Then the magazine was passed to Bill. But Bill just sat there, musing. We thought that was strange, because we knew his mother didn't have anyone left in the world but him. And she loved him, too. We'd seen some of her wonderful letters.

Finally Bill spoke. " I wish"—his voice sounded as if it were coming from the other side of the wall—" that my mother had a good son."

We were all quiet after that." —(*Readers Digest.*)

A Hundred Million Human Guinea Pigs

By

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There is no parallel in history where more than one hundred million people all over the world have been involved in an assessment programme. B.C.G. holds such an unique position. A conservative and an authoritative scientific body like the British Medical Research Council, which is capable of planning, conducting and evaluating programmes with high precision and meticulous care, has declared B.C.G. vaccination useful. According to their recent publication in the British Medical Journal, (February 1956)[3] a reduction of 82% in the incidence of tuberculosis in the tuberculin negative group and 55% in the combined group (positive and negative reactors) is reported to have occured as a result of B.C.G. Further, there was not a single case of the dangerous complication such as miliary tuberculosis or tuberculous meningitis in the vaccinated group, whereas six such complications occured in the control group. While some have harshly dubbed this programme as "Quackery"[2], the Italian Scientist Bareggi goes to the extent of saying that "it will be a social crime not to adopt the providential prophylaxis, which can be furnished by B.C.G."[4] Several countries are happily reporting about the good effects of B.C.G. An excellent report of its efficacy in Tuberculosis comes from Finland, where as a result of B.C.G. campaign, the authorities have found it necessary to partly close down children's wards in T.B. Sanatoria on account of lack of patients! The Finnish National Anti-Tuberculosis Association is fully convinced that B.C.G. is a "powerful weapon" in the combat against Tuberculosis among children and adolescents and they have decided to "intensly continue" B.C.G. for sometime to come without any alterations.[5]

The Vienna Health Authorities are equally convinced and have decided to offer B.C.G. to all new born after 1950 and have obtained excellent results.[4] The Asian Pacific Tuberculosis Conference concluded that "B.C.G. is a safe and effective measure"[4c]. The Eleventh Tuberculosis Conference held in Gdansk concluded that B.C.G. vaccination should be made compulsory."[4d] But what about India?

The answer to this question is by no means simple. It involves one of the most intricate problems that is challenging the Scientists today. It is not, therefore, surprising that in an endeavour to solve this complex problem a huge slice of human population had to be involved. Further, one cannot sit complacently till a complete solution is arrived at. Even in the case of a deadly disease like Cancer one can afford to wait. But tuberculosis—this ubiquitous scourge of mankind demands immediate attention. It cannot be over emphasised that every case of Tuberculosis prevented today will benefit future generations. No effort should be spared to enforce a preventive method in Tuberculosis if one is available. So, an evalution of the merits of the protective power of B.C.G., the only specific prohylactic available so far, deserves our highest consideration.

Convincing figures have been published by a large number of scientific workers but there are also, a few, who have a different tale to tell us. Such an extraordinary state of affairs exists because a large number of factors are involved in this programme which makes the evaluation difficult. What applies to one Country or one group of persons may not hold good for another because of different

conditions and circumstances. It must be realised that B.C.G. can neither cure nor give a complete protection from the attack of Tuberculosis. B.C.G. prevents the fatality that often occurs during the first encounter of a person with the germ of Tuberculosis and also affords to a varying degree resistance to a subsequent attack of the disease. B.C.G. vaccination is an accessory to—not a substitute for—the present measures to eradicate Tuberculosis. It is given today for want of an alternative and it will be discarded the moment a better substitute is available.

A study of the protective mechanism in Tuberculosis reveals that Nature has not adopted the same pattern in respect to acquired resistance in Tuberculosis as in other diseases. Perhaps it is its "master pattern" and is baffling scientists. The study of such a complex problem is purely in the domain of the great scientists but it is intimately concerned with every human being. In a democratic state like ours, everyone has a right to express his opinion and it is but fair that we acquaint ourselves more about this problem before we support or oppose the present programme. The success of a plan depends to a large extent on the co-operation of the people.

To evaluate B.C.G. one should first understand the rationale and safety of the programme and then assess the value of the scheme by the results obtained from experiments on animals and observation on human beings.

When a child encounters Tubercle bacili for the first time, it may overcome the invading germ by its natural resistance; or the tubercle bacilli may overcome the resistance and spread into all parts of the body causing fatal results. It is always an acute process ending in either extremes—complete recovery or death. If the child escapes death during the primary attack it develops allergy and immunity by which the subsequent invasions (re-infection) is arrested. This capacity is achieved by the production of a severe local reaction at the site of invasion, limiting and delaying the spread of the germ, thus giving greater time and opportunity for the trained body mechanism to arrest the spread of the germs if not to destroy them altogether. This altered reactivity of the body is called 'allergy'. This phenomenon was effectively demonstrated by Krause thirty years age[6]. He injected tubercle bacilli into the skin of a normal and an immune (allergic) guinea pig and showed that early removal of the skin at the site of inoculation prevented the disease in the immune animal but not in the normal showing the difference in the rate of the lymphatic spread in the normal and the hyper sensitive animals. The idea of giving B.C.G. is to create such a hypersensitivity. Lurie, in his excellent series of experiments over a period of eleven years, has shown the fact of vital importance that the Mononuclears, (cells which devour the tubercle bacilli), accumulate more rapidly at the local site of infection in the vaccinated and tuberculous animals than in the normal animal and also destroy the ingested bacilli more quickly. Lurie's ingenious experiments[7] on rabbits are more interesting and convincing. He allowed washed Mononuclear cells from normal and immune rabbit to phagocytose tubercle bacilli in the presence of normal or immune serum. After determining the number of bacilli ingested by each cell by cultures, he introduced the normal cells into the anterior chamber of one eye of a normal rabbit and the immune cells into the anterior chamber of the other eye of the same animal. After two weeks of growth inside the animal's eyes, the number of bacilli in the two types of cells was again determined by culture. It has been found that the bacilli multiplied less abundantly in the "immune mononuclears" which were in contact with the normal serum, compared to the "normal mononuclears" which were in contact with the immune serum, when they were phagocytosing. Thus he established beyond doubt that the monocytes play an essential role in acquired resistence to tuberculosis since the fate of

tubercle bacilli appears to be decided within these cells. Lurie's work has been confirmed by Suter, using a different technique (tissue culture method) (1953 and 1954)[1]. The recent studies of Dubos, Pierce and Schaeffer[12] in mice, also confirmed that there is restraint on the growth of Tubercle bacilli in the cells of the immune animal. Since the Tubercle bacilli must multiply within the phagocytic host cells in order to produce a tuberculous lesion, the part played by the immune cells in restricting the growth of the bacilli is significant.

The object of B.C.G. is to introduce a primary infection. Since B.C.G. is an attentuated strain it cannot produce a progressive disease and yet it produces the allergy and the accompanying immunity characteristic of the tubercle bacilli. In other words, B.C.G. gives a controlled primary infection—i.e., the first compulsory experience of the individual with tubercle bacilli without its attendant dangers so that the individual will exhibit allergic manifestation on subsequent encounter with the dangerous live tubercle bacilli.

So when a person, with no experience with tubercle bacilli comes across the live virulent germ, he is in every danger of dying during the primary attack. If, however, he is vaccinated with B.C.G. the danger due to a primary attack is completely got rid of. Secondly, if the primary attack is by a virulent germ, even if the person survives the primary attack, the healed lesion may suddenly flare up at a later date and since the germs are virulent ones, they may cause progressive disease. On the other hand, if it is due to an attenuated germ like B.C.G. it can never produce a progressive disease.

The rationale of B.C.G. being the production of controlled primary reaction there is no object in giving it to a person, who is tuberculin positive. The latter shows that the person is having allergy and has therefore, had or is still having tuberculosis i.e., he has been through the stage of danger against which B.C.G. gives protection. The administration of B.C.G. in such a person will be attended with grave risks.

The next important consideration is to make sure that B.C.G. is devoid of danger. Review of World literature [6] upto March 1954 reveals that only two authentic reports of deaths due to generalised disease by B.C.G. strain is reported while not less than sixty million persons were vaccinated with B.C.G. A mortality of one in thirty millions cannot by any stretch of imagination be considered unsafe. Because, at that rate, even the most well established vaccination like the small pox vaccination, which has stood the test of time and which has helped to completely control small pox in all civilised countries, should be considered hundreds of times more dangerous than B.C.G. There are a large number of therapeutic measures, which are several times more dangerous than B.C.G. Even Anti-tetanus serum given prophylactically or Anti-diphtheretic serum given therapeutically or even the most popular penicillin given parenterally, are hundreds of times more dangerous, if such figures are considered unsafe.

Nevertheless, there is a great hope that even this abnormally low percentage can be lowered further and perhaps reduced to zero by the introduction of similar but completely avirulent strain like the H37Ra, which is a human strain that has been made avirulent. H37Ra strain offers a great promise and is competing with the vole bacillus, which is a new strain discovered in the voles and which does not cause disease in man but confers immunity, [1, 9, 10, 11]. All these must however, stand the test of time. There is also an occasional claim by some workers on the efficacy of killed organisms which has also to be confirmed and evaluated.

For the present, however, B.C.G. is the only weapon available. Convinced of the safety and efficacy of B.C.G. in animals, the

first trial in human beings was started about 30 years ago. It was first tried in children because they were the ones not exposed to Tuberculosis and were consequently running greater risk of succumbing to the primary attack. The excellent results were interrupted by an accidental mix up of the strains at Leubeck which ended in a disaster. Live, virulent strains were mixed up with the attenuated harmless B.C.G. strain, which was inadvertently kept side by side. As a result of this incident, stringent precaution have been introduced in all the B.C.G, laboratories. Persons having lesion or signs of tuberculosis are not permitted inside the laboratories where no other strain of Mycobacterium tuberculosis except B.C.G. strain is kept.

The popularity of B.C.G. after a set back again gained momentum when the blot on B. C. G. was removed by the investigation commission. From France it apread to Scandinavian countries and from oral route it was changed to parenteral route. To test the safety of the procedure Heimbeck, a young Norwegian, injected subcutaneously 20 times the dose of the germs he intended giving to his patients, into his left fore arm. This resulted in a cold abscess in that area, of which he still bears the scar. To avoid the cold abscess the route of injection was changed into intra-dermal. Fully convinced of the results, it was first tried on a large scale on nurses and school children. The results of a few investigations have been tabulated in the insert. These investigations were chosen to bring out clearly the B.C.G. protection in different types of individuals in different age groups and in different surroundings. Such statements alone are not sufficient to arrive at a decision. For any scientific evaluation every detail regarding the conduct of the programme must be furnished; but space does not permit such details. Considering the status of the workers quoted, even after allowing a discount for the errors that creep into such biological investigations, the figures are convincing enough to allay our fears regarding B. C. G. Particularly outstanding are the investigations of Hyge, Anderson and Palmer, and that of the British Medical Research Council. In all these three cases, extreme care and skill were shown in the investigations—Hyge's observation was providential—an outbreak in a school traced to a school mistress. Among the children involved there were all categories—B. C. G. inoculated, uninoculated, positive reactors, negative reactors ; exposed and unexposed, diseased and the escaped.[6] Anderson and Palmer's and B.M.R.C. cases deserve special mention for their sheer brilliance in conducting their experiments if not for the convincing results.

Even at the risk of repetition, the following facts are enlisted to give a true picture of B.C.G. :

1. B.C.G. is by no means an end for Tuberculosis. It does not give complete protection. Its object is to give a controlled primary infection with a non-virulent organism without the attended risk and also to help the individual to ward off mild attacks. It has no place in the protection of an individual in whom a virulent bacilli has already entered and is, therefore, not meant for post-primary or adult type of Tuberculosis.

2. An important precaution to ensure a high percentage of success appears to be the segregation of the child before and after vaccination in foster homes for about a month or more, before being exposed to the risk of tuberculous infection. This applies particularly to infants in heavily infected areas. Investigations in New York and Chicago have emphasised this fact.

3. B.C.G. converts a normal tuberculin negative reactor into a positive reactor. Incidence recorded in South African Gold Mines shows that occurrence of T.B. among persons living under severe physical exertion is greater in the negative reactors and increases with the severity of the tuberculin reaction.

A COLLECTIVE STATEMENT

Investigation	Vaccinated or control	Individuals	T. B. incidence	Deaths	Remarks	Protection on account of B. C. G.
Rosenthal et al Chicago Investigation in infants 6	B. C. G. Control	1,417 1,414	11 39	1 7	Alternate newborn given B.C.G. Cases isolated and followed upto 10 years.	78p.c.
Resenthal et al on infants in T. B. Households 6	B. C. G. Control	151 105	2 5	0 4	To evaluate the protection by B. C. G. in infants in T. B. households. The children were segregated from open cases of T. B.	78p.c.
Anderson & Palmer on North American Indians-children and young adults. 6,8	B. C. G. Control	1,550 1,457	14 49	4 28	Convincing investigation because of perfect controls, check up & follow by unbiased experts. Whereas there were only 3 Cases of Non pulmonary tuberculosis in the vaccinated group there were 19 in the control.	81p.c.
Hyge-Denmark 'outbreak' from a single source-A tuberculous teacher. 6,8	B. C. G. Control	106 94	3 41	— —	Unique observation of outstanding interest—a providential chance for an observation on an ideal case which could never have been carried out deliberately. Whereas 2 A. P. were done in vaccinated group [illegible] A. P. were necessary in the controls.	95p.c.
Heimbeck Original classic trial on probationary Nurses in Oslo 6,8	B. C. G. Control	287 107	8 22	— —	The trial lasted 12 years. First 3 yrs. he watched the tuberculin positive & negative groups. 29·6p.c. of the initially tuberculin negatives developed TB as against 2·6p.c. in Tuberculin +ve. Therefore vaccinated the —ve reactors.	83p.c.
Swedish Army Recruits. 61, 474 of which 60 p.c. were vaccinated. Rest served as controls. 8	B. C. G. Control	60p.c. 40p.c.	1 expressed aa ratio 7·1 expressed as ratio		The two groups were carefully analysed & statistically comparable Observed for 5 years.	86p.c.
British Medical Research Council Report: Feb. 1956 56,7C0 volunteers were enlisted. 3	B. C. G. Control	14,109 13,300	·037p.c. ·194p.c.	Nil Nil	Accurate, elaborate & latest still progressing—No incidence of Miliary. TB. or TB. meningitis in the vaccinated group but 6 cases in control.	82p.c. for -ve reactors alone 55p.c. for both groups.
Stockholm BCG started in 1943. 50,000 children vaccinated 4	B. C. G. Control	31,12 843	7 328	— —		92p.c.
Vienna B. C. G. Campaign in the new born 1951—1953. 4b	B. C. G. Control	14,900 23,000	17 114	0 4	13 cases of TB meningitis and Miliary TB in the control. Only a single Miliary TB in the vaccinated group.	81p.c.

But the severity of the disease and mortality was definitely in favour of the positive reactor, who showed better resistive power.[6] Further, it has been shown that one third of the strongly positive reactors broke down within three months of their admission to the mines. According to Wilson & Miles,[6] the Medical inspection in these labour recruits was not strict and a number of the positive reactors must have been suffering from active lesion even at the time of admission and it has progressed under severe physical exercise to manifest T.B. So the higher percentage of incidence in positives is more apparent than real.

OBSERVATION IN SOUTH AFRICAN GOLD MINERS[6]

Type of Reactor	Number.	T. B. positive.	Incidence per 100,000	Percentage of cases running septicemic course.
Negative.	32,864	114	347	24%
Weak +ve & moderate.	57,236	391	683	5%
Strong +ve.	3,879	60	1,547	4%

4. B. C. G. does not give a parmanent resistive power. It wanes off after some time. Therefore, peirodc observation and re-inoculation are essential.

5. Since a large number of factors are involved, the value of B.C.G. for each country must be judged separately, and India must take her own decision based on World knowledge.

6. B. C. G. finds a place in our National Health Programme because there is no other at present. It has been sponsored by no less choice a body than the World HealthOrganisation. Whether B.C.G. is given or not, the uplift of Socio-economic status of the country is a primary need and will definitely decrease the death-rate from Tuberculosis

I may finally conclude with the observation of Frederic Heaf, David Davies, Professor of Tuberculosis and Member of Council of the National Association for the Prevention of Tuberculosis (England), in his expression of gratitude to this out-law of his race :—

" If for a few moments we can enter the realms of fancy and give to acid fast bacteria a kingdom of their own, there is no doubt that the Bacillus Calmette Guerin would be regarded by his kith and kin as a fifth Columnist. Living in isolation from the rest of his fellows and feeding on strange foods, he not only renounces the weapons of war against humans, but actively assists in protecting them against the attacks of his virulent brothers. Although we do not admire such craven behaviour we cannot help being grateful for the way in which this weak and impoverished member of the acid fast bacteria comes to our aid against the formidable Mycobacterium tuberculosis which Burns would have classed with his louse as

'Ye ugly, creepin, blastit wonner

Detested, shunn'd by saint an sinner.' " *

* Extract from the forward on the Book on " B.C.G. and Vole Vaccination" (1954) by K. Neville Irvine, Adviser in B.C.G. Vaccination to the Oxford Regional Hospital Board, England.

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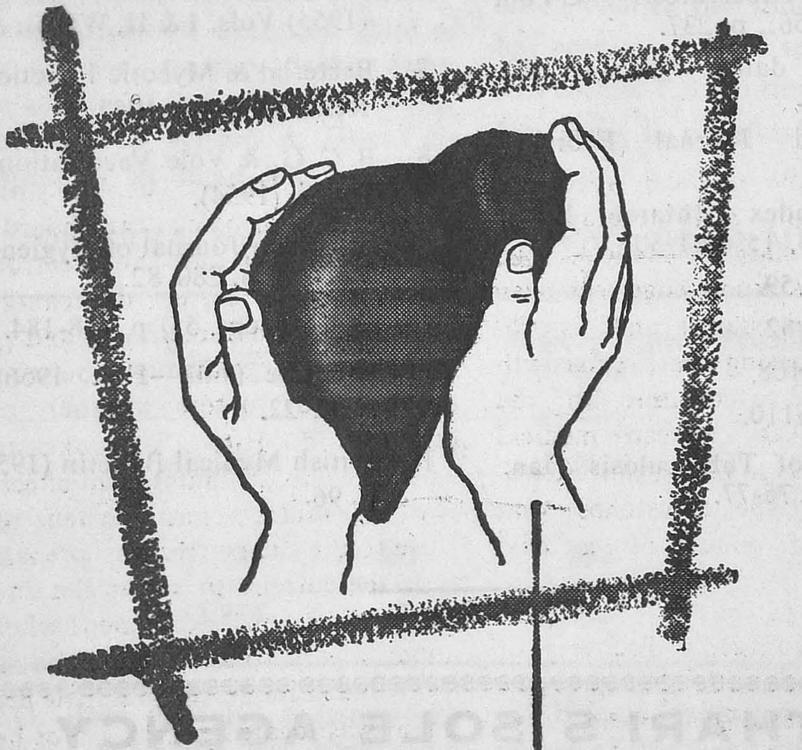

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The Story of the Birth of Radiology

By

DR. A. N. K. MENON,

Head of the Department of Radiology.

The story behind the medical speciality of Radiology, its origin, early development and rapid growth to maturity—reflects the tempo at which medical knowledge has been expanding since the renaissance and is prophetic of the ever increasing rate of growth which may be expected to continue in the centuries that lie ahead. Already medical historians are unanimous in listing the discovery of X-rays among the milestones that punctuate the onward march of medical science.

Wilhelm Conrad Rontgen's discovery of a new form of rays ranks with the previous five outstanding contributions spread over two centuries which represents the basis of modern clinical diagnosis as we know it today, the previous outstanding contributions being :—

(1) Conception of the circulation of blood by Harvey in 1628. (2) Introduction of microscopy by Von Leuwenhock in 1670: (3) Initiation of percussion by Auenbrugger in 1761. (4) Introduction of Stethoscope by Laennec in 1819 and (5) the production of Opthalmoscope by Helmhottz in 1851. Discovery of X-rays constitute a new point of departure in medical thought followed by innumerable contributions in the advancement of medicine. This is associated with human benifits too, far reaching to be easily appreciated.

In the evening of November 8th, 1895, professor Rontgen, Professor of Physics in the University of Wurzburg in Germany, was investigating the phenomenon accompanying the passage of high tension electric current through vacuum tubes. He had selected a pear shaped Hittorf—Crooke's tube and had covered it with black card-board and then hooked the tube into the electrodes of the Ruhnkorf coil. After darkening the room, he started the induction coil and passd a high tension discharge through the tube. His main purpose was to test whether cathode rays produced in a Hittorf's-Crookes tube without a window has any fluorescent effect on Barium platinocyanide screen, when placed very close to the tube. He was preparing to interrupt the current, to set up the screen for the above mentioned experiment when suddenly about a yard from the tube, he saw a weak light that shimmered on a little bench, that he knew was located nearby. Not believing this possible, he passed another series of discharges through the tube and again the fluorescence appeared. Highly excited, Roentgen lit a match and to his great surprise, found that the source of this mysterious light was a little Barium platinocyanide screen lying on the bench. He repeated this experiment again and again each time taking the screen away from the tube and each time getting the same result. He knew that Cathode rays cannot penetrate more than a few centimeters in air. He became deeply absorbed in attempting to explain the strange phenomenon. His concentration was so intense, that he became totally unaware of the passage of time and of his surroundings. He did not notice Mr. Masstaller who entered the laboratory in search for an apparatus. Several times Mrs. Roentgen sent a servant to call him to dinner and when he sat down for dinner, he ate little, and was in complete silence. The meal was hardly finished. when he returned to the lab he made no reply when Mrs. Roentgen asked him what was the matter.

Although the first observations of this unidentified emnation were made on Friday November 8th 1895, the phenomenon was recorded only a few days later. He repeated the experiment again and again and devoted himself exclusively to identify more properties of this emnation for weeks, in which he ate and slept in his laboratory. He placed materials of greater density between the tube and Barium platinocyanide screen. He placed a paper, then a book, then wood and then plates of various metals; between the tube and the little screen and found brightness or fluorescence still present even though to a lesser extent depending upon the densities of the material interposed. Finally he placed his own hand in the path of rays and found that bones within it were clearly outlined. From this it was a short step to substitute a photographic plate for the fluorescent screen. Thus the science of Radiology was born.

The first radiograph taken in this world was that of the hand of Mrs. Roentgen herself. After seeing the fluorescent image of the bones of his hand on Barium platinocyanide screen, he conceived another experiment for which he persuaded his wife to be the object. At his advice she placed her hand on a cassette loaded with a photographic plate upon which he directed these rays for 15 minutes. On developing this plate the bones of her hand appeared light on the darker shadow of the surrounding muscles. Two rings or her hand were clearly visible. To Mrs. Roentgen this experiment gave a vague premonition of death, But to the world it was one of the greatest blessing because the radiography of the bones, as well as visualisation of foreign bodies were accomplished in one stroke. Thus fortunately for medicine Roentgen himself used living human tissues among the test objects to prove the penetrating properties of the mysterious beam which he designated as X-rays.

Had he not tested his beam with living tissues, the attractive potentialities of X-rays in the field of medicine might well have gone unexplored for a considerable time. Actually the medical utility of the new form of energy was widely tested from the start.

Professor Roentgen did not publish this great discovery till he had completely satisfied himself. He shut himself inside the laboratory for seven long weeks and carried out an astonishing number of experiments and only when he satisfied himself completely with the correctness of the conclusions he announced his discovery on 28th December 1895 in the Journal of Physical Medicine Society of Warburg under the title "On a new kind of rays—a preliminary communication" The news of this discovery was flashed all over the world and created a great stir in the scientific circles. Within a few weeks of its publication the paper was translated into various languages & became known all over the world. Scientists at once realised the great possibilities of the epoch making discovery. Roentgen was overwhelmed with honours and praises not only from his own country, but also from all over Europe and America. The newspapers were full of it and hailed the discovery as one of the most brilliant ever made. But as always there were a few sceptics who condemned this discovery as an indecent exposure of human body and wanted to make it a joke. Conservative Victorian women were shocked and a London firm advertised "X-ray proof underclothing for ladies." Some hostile comments were clothed in verses and maliciously tried to credit his assistants and even technicians with the discovery. But the scientific and saner world with one voice acclaimed him. In 1901 when the Nobel prize was first awarded, he received the prize for Physics. Roentgen demonstrated X-rays before Kaiser Wilhelm II and was decorated with the Prussian order of the crown. He was awarded Rumford gold medal by the Royal Society of London. Medals, degrees and titles were showered on him. But he ever remained a humble devotee in the altar of science,—sedate, calm, and

lovable, unmoved by adversity as well as by prosperity.

Professor Roentgen was born in March 27, 1845 at Lennep, Rhine Province, Germany. He studied at Uterect andZurich where he obtained his docterate degree in physics in 1869. He dedicated his life to the pure science and was a follower and successor of Professor Kundt, a great authority in physics, was professor of Physics in Strassburg, Giesson, Wurzburg and Munich. He declined many honours and posts, so that he could devote all his time to research in physical science. Even without the discovery ofX-rays which was the crowning success of his eventful life he had already secured a place in the realm of physics by his other 57 original contributions in the physics of light and electricity. He married Anna Berth Ludwig of Zurich in 1872 who was an ideal wife to the professor. Professor Roentgen gave his discovery to the world without making any personal profit. He was always a humble, lovable man and was one of the best liked personalities in the history of Science. He died full of years and honours at Munich on February 10th, 1923. He gave everything he had to the Science and humanity and is rightly hailed as the father of Radiology, youngest but one of the greatest of medical specialities. He along with Prof. Becquerel who in 1896 first proved the existence of natural radio-activity in Uranium and with those in comparable savants and Martyrs of Science, Pierre and Madame curie who in 1898 isolated the naturally radio-active element of Radium, well and truly laid the physical foundations of the Medical speciality of Radiology.

(I have freely made use of the following books.)

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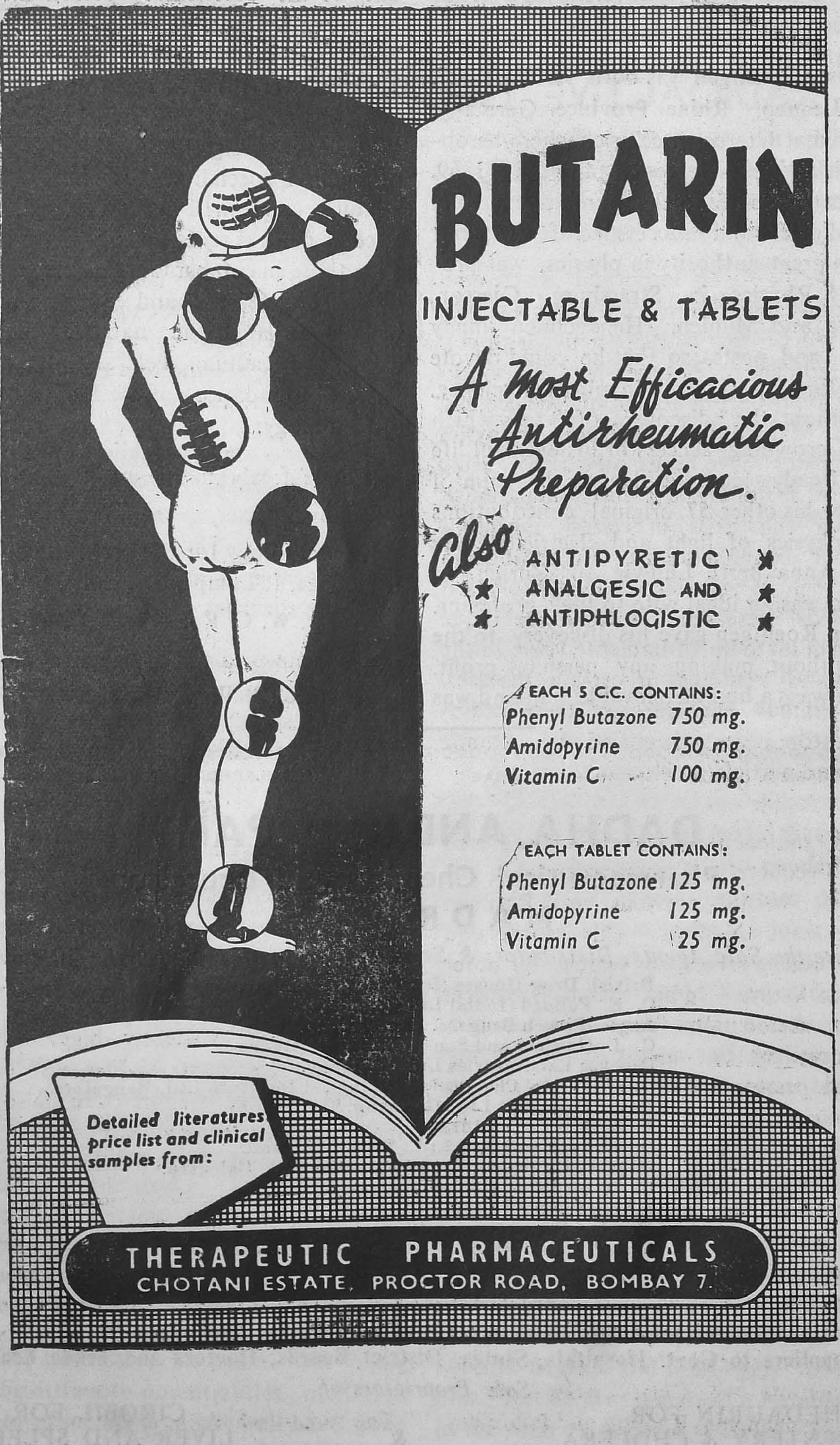
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History and place of

RADIOACTIVE ISOTOPES IN MEDICINE

By

K. P. PADMACHANDRAN

III Year

One of the most important discoveries which have revolutionised science in the past hundred years is that of radio active isotopes. To day radioactive isotopes find an application in almost every branch of science and industry. Many difficult problems in physics and chemistry have been solved by using radioactive isotopes. To the industrialist, they from the basis of certain ingenious methods of testing materials. In addition to this they serve as valuable tools in biological and medical research. Isotopic technique has been found to be of immense value in the diognosis and treatment of certain diseases. Now enormous quantities of these radioactive isotopes are produced by Atomic reactors and particle accelerators.

Natural radioactivity was first discovered by Henri Becquerel, a French scientist in the year 1896. In the previous year Rontgen had discovered X-rays. This stimulated many research workers to search for other sources of X-rays. In his search, Becquerel somewhat accidentally found that uranium emitted a ray which was capable of fogging a shielded photographic plate. He placed some uranium salts wrapped in a black paper next to a photographic plate. After several hours he observed a blackening of the photographic plate. This was the discovery of natural radioactivity. With the help of Marie and Pierre Curie, Becquerel conducted a number of experiments to find out the constituent parts in uranium which were responsible for the emission of the radiation. After sometime the Curies were able to seperate two elements, Radium and Polonium from Uranium.

The study on the true structure of atom made by Dalton, Mendelyew, Thompson, Rutherford, Chadwick and others have helped in formulating the present day theory of the structure of the atom.

The Atoms are the smallest units of matter and can be further devided into the basic particles of matter, namely, Protons, Neutrons and electrons. The protons and neutrons constitute the nucleus of the atom around which the electrons rotate in shells.

The electron carries a negative charge and has a negligible mass of 10^{-27} grams. It moves at a great speed, spinning in its own axis in addition to rotating around the nucleus.

The proton carries a positive charge, equal and opposite to that of of electron. Proton has a mass of $1{\cdot}6725 \times 10^{-24}$ grams. Atoms of a given element have a definite number of protons. There is an electron in the orbital ring for every proton in the nucleus thereby making the atom electrically neutral.

The neutron is slightly bigger than the proton in size. But it does not carry an electrical charge. There are also other subatomic particles namely Positron, Neutrions, Meson and Photon which are of less importance.

The diameter of the nucleus is very much smaller than that of the whole atom and hence there is a lot of empty space inside the atom between the nucleus and the electron shells.

The forces which hold the basic particles together in the atom constitu te the energy in

the atom ; when these forces are externally released by following suitable methods, they escape as the alpha, beta particles, Infra-red, ultraviolet, x-and gamma rays.

The sum of the protons in the atom of an element is termed as its atomic number, while the sum of protons and neutrons in the atom of an element forms its mass number. The atomic weight is the weight of an atom of the element including the electrons in them. The number of protons in an atom of the element determines its physical and chemical properties. It is possible to have two elements with the same number of protons but with varifying number of neutrons. Such elements are called Isotopes. Isotopes are two elements with the same atomic number but with diffierent atomic weights. Isotopes are identical as far as the chemical properties and physical characteristics are concerned but they differ in the property of radioactivity. Atoms of certain elements like Radium have nuclei which are very unstable and hence undergo a series of disintegrations with the emission of various types of radia. This process is accompanied by a change in the atomic weight of the element as there is a loss of neutrons from the nuclei. These elements are the so called natural radioactive isotopes. The rate at which this type of decay takes place varies enormously with the different elements. It takes place very slowly in the case of radium ; but is quite fast in Carbon. The time taken by a radioactive element to decay to one half of its original activity is termed the half life of the element.

In 1934 Curie and Jolliot discovered the artificial radioactive isotope of phosphorus (p^{30}). It was prepared by bombarding aluminium with (alpha) particles. It was found that isotopes could be produced by altering the number of neutrons in the atomic nuclei. Later large numbr of these artificial radioactive isotopes were produced by the help of cyclotrons and other machines. Feruni and others prepared a number of radioactive isotopes by using neutron induced reactors. After the formation of the uranium pile following the military researches of second world war large quantities of artificial radioactive isotopes were made available. At the same time techniques of detecting nuclear radiations were invented. Radioactive isotopes were used in the various fields research work. The application of isotopes as tracers was gaining great importance in all branches of scientific research. It was also noted that the tumour cells were more rapidly destroyed than the normal cells by the ionising radiations. Thus the therapeutic use of these isotopes were also recognised.

History of the use of radioatcive isotopes in biological research marks from the day Hevesey employed the radioactive isotope of lead (Radium D) in his studies of the metabolism in a broad bean plant. He succeeded in estimating quantitatively the uptake and distribution of that element in the plant by finding out the radioactivity of the different parts of the plant. Hevesey did similar experiments with Bismuth (Radium E). The findings were not of much value as lead and Bismuth were not normally present in the biological system in reasonable quantities. Later Hevesey and Cheiwitz used radio-active phosphorus in studying the metabolism of that element in rats.

The use of radioactive isotopes as tracers is based on the following factors.

(1) The radioactive isotope of a stable element has the same properties as that of the natural element except for the property of radioactivity.

(2) The quantity of radioactive isotopes used as tracers are too small to produce any physiological change.

(3) The isotopes are used in 'labelling' molecules and these labelled ones can easily be isolated from the natural homologues by using very sensitive detectors.

(4) The artificial radioactive elements emit gamma rays which pass through the tissue to come to the surface of the body.

(5) The gamma rays emitted by the radioactive substances, deposited selectively in certain tissues can be measured by the use of Geiger Muller counters.

Geiger Muller Counter, named after its inventors, consists of a chamber containing gaseous media at a low pressure. In this chamber ionisations are produced by the radiation from a radioactive focus. The number of ionisations occuring in a fixed time is a measure of the radioactivity of the source, and the concentration of the radioactive material. In the Geiger Muller counter the ionisations are counted by using a special device.

The radioactivity can also be measured by directly examining the tissues removed from the body after the administration of radioactive isotopes. The sections of radioactive tissues may be placed against photographic films and after a sufficient time of exposure the film may be removed and developed to produce a radioautograph.

At present radioactive isotopes of many elements are available for use as tracers in medical research. Some of the more important of them with their respective half lives are given below.

Isotopes		*Half life*
Carbon	C^{11}	205 minutes
Iodine	I^{130}	12·6 hours
Sodium	Na^{24}	14·8 hours
Bromine	Br^{86}	34 hours
Gold	Au^{198}	2·7 days
Iodine	I^{131}	8 days
Phosphorus	P^{32}	14·3 days
Iron	Fe^{59}	47 days
Calcium	Ca^{45}	180 days
Iron	Fe^{54}	4 years
Carbon	C^{14}	$4{\cdot}7 \times 10^3$ years

The applications of the radioactive isotopes in medical research, clinical diagnosis and therapy are too vast to be covered fully in this brief outline.

Radioactive isotopes in medical research:—

A lot of information about the metabolism; blood circulation and body fluid exchanges have been obtained by using radioactive isotopes as tracers. Some very important findings and conclusions after using them are given below.

1. The dynamic state of the body constituents have been proved.

2. The old view of exogenous and Endogenous metabolism has been disproved. It is proved that there is a metabolic pool consisting of simple substances.

3 The synthesis of complex substances like cholesterol from simple substances have been known to take place in the body. It is proved beyond doubt that acetate is the primary building material from which the complex cyclopentanophenantherene nucleus and the side chains in cholesterol are synthasised.

4. Information about the metabolic pathways of fats, proteins, and Carbohydrates have been obtained. The process of desaturation of saturated fatty acids like stearic acid to unsaturated oleic acid has been proved to take place in the liver, by using fatty acids labelled with Denterium. Isotopic experiments confirmed that these changes are reversible. The long chained fatty acids are known to be synthesized in the body from two carbon atom compounds. The formation of glycerol part of fat from glucose is also proved with the aid of carbon atoms labelled, with c^{14}. The synthesis of proteins in the body and the fate of aminoacids have been studied by using N^{15}, H^3, S^{35}, C^{14} etc. The ornithine, citrulline, orginine cycle for the formation of urea in the body has been proved by using C^{14} and N^{15} as tracers.

5. The biosynthesis and degradation of haemoglobin has been studied

6. Biological synthesis of Adrenaline from phenylalanine has been proved by using radioactive Carbon C^{14}.

7. The respiratory capacity of lungs has been measured by using gaseous tracers like N^{15}.

8. By using radioactive Phosphorus P^{32} the total blood volume in man has been measured.

9. Radioactive viruses were produced by growing them in a medium containing radioactive phosphorus P^{32} and they were followed in a test animal to study their action in them.

Radioactive isotopes in Clinical Diagnosis :—Radioactive isotopes of various elements like Iodine, Phosphorus and iron can be used in the diagnosis diseases.

1. Radioactive iodine I^{130} in the diagnosis of diseases of the thyroid. An idea about the functional activity of the thyroid gland can be obtained either by ascertaining the speed and proportion of the uptake of Iodine by the thyroid gland or by assessing the quality of hormones synthesized by the gland after the administration of the radioactive iodine. The concentration of iodine in thyroid gland can be known by placing a Geiger Muller counter over the neck at the site of the gland The normal uptake of iodine by the thyroid gland varies from 10% to 40%.

2. Radioactive Iron Fe^{59} in diagnosing diseases of the blood forming tissues. Radioactive Iron Fe^{59} in a chemical form similar to that of plasmatic iron is injected intravenously. The iron is made use of by the bonemarrow to form heamoglobin. So the injected radioactive material reappears in the haemoglobin of the red blood corpuscles after sometime. The amount of radioactive haemoglobin in the blood is an index of the activity of bone marrow. The concentration of radioactive iron in blood is determined by using suitable detectors.

3. Diiodufluorescein or iodised albumin serum in discovering braintumors; when dicodoflourescein is injected it gets deposited selectively in the tumor tissues as the uptake of the radioactive material is higher in tumor tissue, than in the surrounding normal tissue. Hence the distribution of the gammarays–emitted around the skull which can be detected by an external detecter, will give an idea about the exact size and location of the tumor of brain.

4. Radioactive phosphorus P^{32} in identifying tumor tissues. As phosphorus is indispensable for the secretion of nucleic acid which is essential for all cellular growth, P^{32} when administered in the form of Sodium Phospate is easily taken up by all tumors. Hence the tumor tissue, with a high concentration of Rodioactive Phosphorus P^{32} can be identified. P^{32} has been used in the identification of cancer of the breast and its distant metastases.

5. Radioactive sodium Na^{24} is used in the study of Peripheral Vascular diseases and in detecting the presence and degree of obstruction in blood vessels.

6. Radio Thulium^{170} or Xenon^{133} can be used to provide rays for radiographic purposes. The radiation supplied is not as intense as the modern x-rays—But they are simple in that they can operate without electric current and very small quantities of the material is necessary.

7. In addition to the adove mentioned radioactive substances there are many other isotopes which can be used in clinical diagnosis e.g., radio Strontium can be used in the study of tumors of bones.

Radioactive isotopes in therapy :—The tumor cells are more rapidly destroyed by the radiation from the radioactive substances. This property has been made use of in the

application of radioactive isotopes in therapy.

The following conditions have to be satisfied by an isotope before it can be used in therapy.

1. The isotope should be obtained in the pure form.

2. The half life of the isotope should preferably be 2 to 10 days.

3. The isotope should get deposited selectively in the required tissues if administered. For nearly fifty years radioactive isotopes of Radium have been used in the treatment of various skin lesions and malignant conditions. The gamma rays emitted by the isotopes are responsible for the effectiveness of these isotapes. Artificial radioactive isotopes too are used in therapy. Radiophosphorus was the first isotope to be used successfully in therapy (in the treatment of chronic leukemia). In the recent years many other isotopes also have been tried in various conditions.

1. Radioactive phosphorus p^{32} in the soluble form of disodium acid phosphate is administered orally or intravenously in the treatment of blood dyscrasias. It is also administered as anhydrous chromium phosphate in the treatment of leukemias.

2. Radioactive iodine I^{131} has been used in the treatment of hyperthyroidism. It is administered orally in an aqueous solution of Sodium Iodine.

3. Radioactive Gold Au^{198} has been used in the treatment of various malignant conditions such as Carcinoma of the porstate, Carcinoma of the cervix and in controlling malignant effusions.

4. Radioactive Sodium Na^{24} has been used for total irradiation in leukemias. Great care has to be taken in handling and administering radioactive substances to avoid injurious effects of irradiation on the healthy individual. It is proved that radioactive substances in their therapeutic doses do not have any significant ill effect on the general health of the patients.

Every day the Radioactive isotopes are gaining more and more importance in the treatment of various diseases, the malignant ones in particular. From this brief outline the value and the chances of advancement of the isotopic technique in medical research, clinical diagnosie and treatment of diseases can be well understood. In future as more Atomic reactors come into existence, more of radioactive isotopes will be available for use in various fields of science. It can be believed that then the isotopic technique will occupy a more important position in medical science and will replace many of the present methods of diagnosis and treatment.

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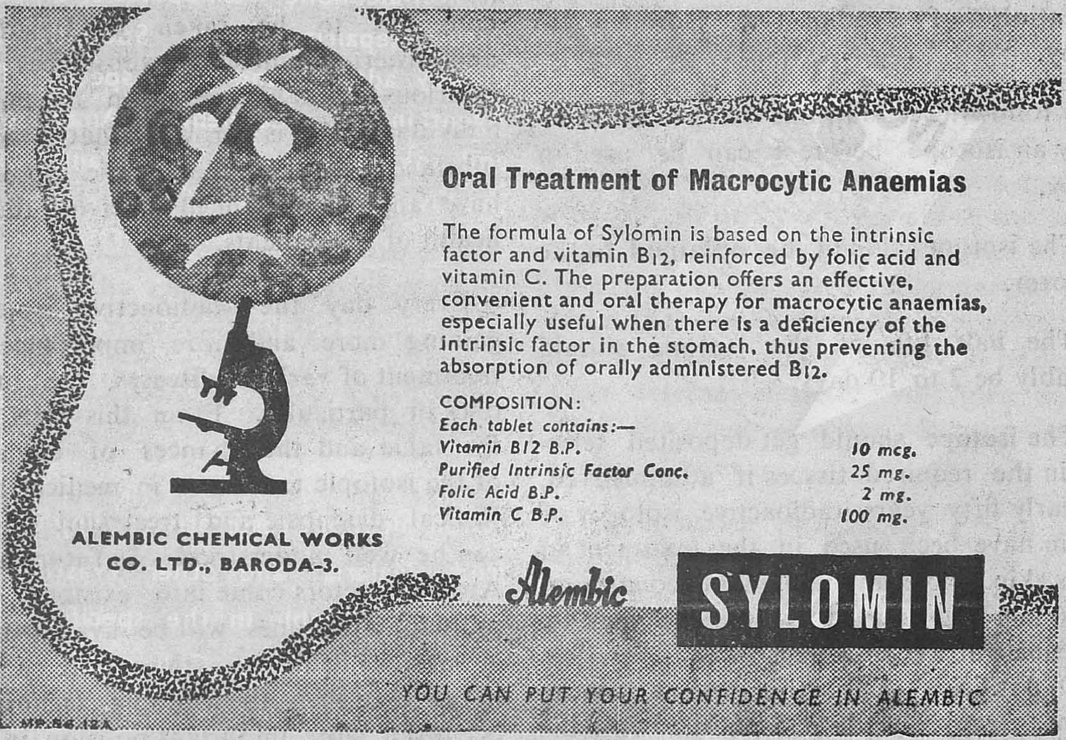
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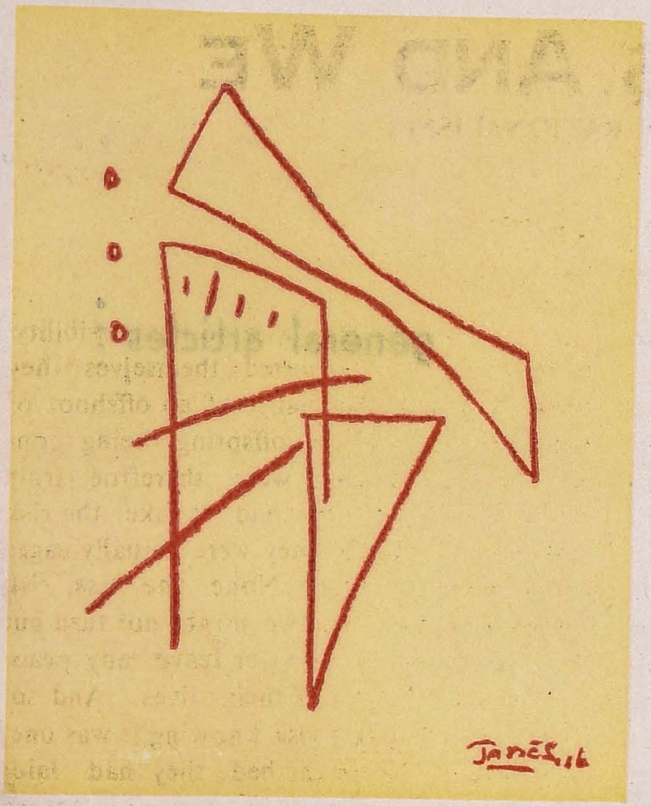


"MUSIC"

People who try to explain pictures are usually barking up the wrong tree" —(*Picasso*).

James A. Thachil, (signing T. A. James), is a new artist to Stanley. After a long apathy, in which the mind had gathered sensations and had formed and deformed them into symbols, he has unloaded himself of those feelings and visions. But like all artists who have said, whatever they wanted to say, in a manner they felt it ought to be said—he has met opposition and indifference. "James Thachil drives one crazy", "James is more dangerous than alcohol," and "James is a big hoax", are some of the comments that have greeted his art. Like all artists he had to endure them, hoping that time will, as it always does, destroy the unanswerable critics.

James Thachil has drawn his pictures in a highly impressionistic style which verges on Naturalism. It is almost a revival of the Impressionistic school of painting after two decades, in the same manner as a Pre-Raphelite like Rossetti recovered the religious quality of Italian primitives in his Christian themes. The drawing "MUSIC", has a lyrical quality born out of spontaniety—almost bordering on poetry. The simplification of the theme, has brought the drawing, a greater intensity without leading to distortion. The artist is only aware of the piano and the liquid drops of music falling like raindrops from leaf to leaf in the morning sun, we can almost visualize the hands of the player caressing the keys and are carried away, like the artist, into a world of sensuous sensations.

The quality that appeals most to an admirer of James Thachil's art is its spontaniety. As he said once—"A picture is an adventure each time; when I tackle the white paper, I never know how it is going to come out, only the sensations and visions are within me. This is the risk you must take. I never visualize a picture in my mind before starting to paint".

(Contributed)

PARENTS AND WE

(A STUDY IN RATIONALISM)

By

K. RAMA RAO,

Final Year

We have had the biggest surprise of our lives in our birth. Whoever amongst us, before being born, had the faintest idea as to when, where and of whom he would be brought forth into this world ? We were born all right, but we did have no inkling about it; we were not expecting it to happen; nor was it our wish that it should be so. Further, was our birth any of our doing at all ? No, there was no hand of ours in it. There certainly could not have been any part of ours in our conception. We are here although we had not asked for it and although we had not played even an unknowing part in its causation.

Now that we are arrived in this wide world, we have to resign ourselves to the fact. But to live in it costs money and plenty of it—money for our board, for our lodge, for our vesture and for our pleasure. And where do we get all that money from, since our own hands were empty at birth ? Were we born in a matrilineal society—as in Polynesia of to-day and Malabar of yesterday—our maternal uncle would naturally assume all our responsibilities. If it were a totalitarian country that we are in, the state would pay for our upkeep till we get on our own. But since here we are in a patriarchal society no one but our father, the leader and bread winner of our family would care to spend on us.

We were born of our father and our mother of their sexual union. Our parents were enjoying conrinbial bliss but there it happened we were born, just incidental to their pleasure. It was not however an accident, an accident in its complete sense. Ignorant of course they were to the actual occurrence of the incident but certainly they were wise to its possibility. Everytime they besported themselves they knew there was the chance of an offshoot of their pleasure, of an offspring being conceived. Our parents were therefroe truly aware of the risk they had to take, the risk that was we. May be they were actually eager about having a child. None the less, risk we still would be since we might not turn out to be good sons to them or leave any peace for them for the rest of their lives. And so, since they did take a risk knowing it was one, they have to lie in the bed they had laid. They are therefore morally responsible for all our comforts in this world. All through our lives, till we be no more, we have a right to expect our parents to provide for our sustenance and comforts.

Our parents therefore have an eternal duty towards us, a duty that does not cease with their death but only ends when we cease to live. By right we can be a continual drain on their income, a perpetual burden on their existence. But that would not be necessary. We shall not need them to maintain us all through our lives. We sure sometime can get a job to earn. That sometime would only be when we are well-groomed and ready for the job. Hence we should at first get so as to earn the job undoubtedly, proper education is the prime consideration, were we to have a good vocation. So, our parents should get us educated to our liking. But while doing it, they are only carrying out a moral duty enjoined on them. It should therefore be irrespective of whether they like their son (or daughter) or not. One's likes and dislikes have nothing to do with duty.

If any parent wilfully neglects to do his duty, he deserves to be severely condemned. He becomes a criminal—not perhaps legally but morally, which is more disgraceful. But where a parent fulfils his duty no particular credit should be his. All the same, if he was so nice and so kind as to endear himself to us and if he was so very affectionate as to earn our love, then that would be another matter. We can be grateful to our parents not because of their bringing us up but because of their kindness and affection.

When we start earning ourselves and cease to lean on our parents do we owe them anything at all? No, the balance is all even when the parents complete their duty. If in the place of the parent, our uncle or some other person paid for our education, we would then be indebted to that benefactor. But, our parents we owe nothing, except perhaps their kindness and affection, which is but nothing material. Where a man provides for and tends to his parents in their old age that is his pleasure ; but that would be munificience like repaying affection with bounty. Where another man wants to have nothing of his parents but wants to live his own life apart from them, that is his pleasure and he is fully justified in that. Not indebted to them, he is free to do what he pleases and no blame attaches to him, If parents are to be the responsibility of their sons, then what about those parents that have no children ?

When a man ceases to depend on his parents there is in him the birth of a new man, a free man. A bud that he had remained all along has now blossomed forth into majestic grandeur. He now possesses a dignity all his own that, has a glory all its own. To tax our parents' means after our attaining freedom may be our privilage, but it would not be humane. Our parents would have to provide for all their future years, the feeblest and the most difficult part of their lives. If we therefore recieve any money from them, it is like sending them to their graves before their end is near.

Our parents die and when they do, they leave behind all their wealth, which is our patrimony. By common law it passes into our hands, the hands of their sons and daughters. But, if we accept that wealth, we also reject the dignity and the glory that have come to be ours. We certainly could do without this wealth. We should not appropriate what belongs to the toil of somebody else. What does it matter even if that somebody be our father? Supposing this a matriarchal society, what right would we then have to our father's wealth ? What after all is father once we are on our own legs? What the parent in the animal kingdom when once its young is able to fend for itself? We should also consider what a monstrously unjust advantage it would give a man with a rich parentage over all his poorer neighbours less favourably born. If we should achieve anything on earth, either wealth or fame, it should be because of our personal qualities, our intelligence or our labour but not because of our birth or our inheritence. But, alas, nothing would be sense to a man where money is concerned. What man would reject the wealth that seeks him out ? So much so, if the wrongs are to be rectified, then our government should enact laws that makes patrimony illegal. The state should always be the beneficiary whenever a man dies. This is the best means by which the property left behind benefits all the citizens and not just one person, who chanced to be the son of the dead man.

A Courtesy Visit to Tirupathi

By

C. V. KRISHNASWAMI,

III Year.

The journey to Tirupathi as most of you do not know is an event- studded affair. The usual procedure is-you hurry up the food into you, then hurry up yourself to the Station ; hurry your baggage and lastly your person into the compartment of the Bombay Express. Then you proceed to relax on your leg-right or left depending on which one you are standing. After some time when you have been foiled by a neighbour in your attempt to get at a seat, you resign yourself to fate and start standing on the other leg.

Now the Engine screams and jerks forwards upsetting your balance (I mean equilibrium) and your neighbour's feeding bottle-assuming that your neighbour is an elderly female in the act of glaxoing her baby. The train then gathers speed; you, your balance; and your neighbour, her feeding bottle. Then you try to sleep standing on one leg which you are not able to, because back at home you are accustomed to sleeping with both of your legs well planted on the body and your hand on the roof of the City Transport bus.

By this-time the next station is reached and you are a step forward with regards space matters viz. you are now standing on both of your legs. Proceeding along these lines, by the time you get seated you find the train has arrived at Renigunta, the alighting point. Here you get into the Bus that is destined by its owners (though not by fate, which more often than not thinks otherwise) to go to the top of the hills.

The journey uphill, is very interesting with the sylvan scenery staring stright at you from both flanks. The road is not so straight and studded with berds that remind you of the pins in the hairdo of a modern college girl-both in shape and in number! Some people in the Bus take to vomiting during the up-hill journey; some take to fainting and some others to the inevitable sleeping. You of course being stout hearted do not vomit or faint; but since you have to fall into one of three categories, willingly choose the last. At the end of one long hour the bus reaches the top of the hill and you find yourself let out in the midst of a species of animals that have an ancestral claim on humanity. These are the ones that welcome you first and they are the ones that will ultimately give you a hearty send off. Prior to that they visit your apartment and make a hearty lunch of your fruit basket (which you have consciously bought as an offering to God.) On your way to worship, one of these ancestors graciously borrows your spectacles from your nose and the object suffers the same fate as of a borrowed book.

You reach the temple with a view of wishing Lord Venkateswara a hearty morning and find familiar never-ending queues that make you reminiscent of the queues in the Bus stops-cinemas-Cricket matches etc. in your own city. You of course trained by these, stand with immaculate ease, gain access, wish the God good morning, receive his blessings with thanks return out equipped with Bananas and other things; loose the equipment to your animal friends (or relatives if you prefer) and finally reach your apartment. After repeating the above procedure—once again in the evening you feel your mission fulfilled-(The tender care you have so far taken of your hairdo has led us to assume that your prayer has been not to loose your seven locks like Samsan, but only to pay a courtesy call on God).

The journey back up to Renigunta Junction is eventless and dumps you there in the early hours of the night. Now you known the train is due only in the early hours of the morning and the intervening time has to be killed and you inevitably resort to sleeping. The question arises as to the place for respite. The obvious suggestion of the waiting room strikes you and you go there only to find that the same suggestion had already struck more persons than the waiting room could accomadate. Therefore you are forced to follow the example of some who are spreading their beds on the platform. Invariably a loony chap and beastly mongrel attach themselves close to you. Don't for a moment think that you are the only one oppressed such. All the other platform nappers are also subjected to the same treatment. There are more loony chaps and beastly mongrels in the Renigunta Station Platform than you can imagine. It is of course a job to keep off this loony bin. He not only sleeps beside you in railway platforms, but goes further and asks you for a cigarette. Refuse, and he will promptly inform you that he is the Maharaja of Mysore. Still if you don't yield, he will tell you that he is Jawaharlal Nehru or Mahatma Gandhi. If you continue to be obstinate he leaves polititians aside and tries a hand at cine stars. Still if you are foolish enough to contiadict, the loony chap will start looking meancingly at you, as if to bite you to shreds. The best method is of course to pretend to be asleep. But then can any one ever sleep with a crackpot on one side and a shabby dog on the other, not knowing which will be biting his ear and which his leg!

Thus you suffer between the two horns of a dilemma until the train comes and rescues you from the clutches of loonies to a saner atmosphere-back to your own golden City.

Oblique Angles:

The reason that God made woman last was that he did not want any advice while creating man.

(*U.S. Coast guard Magazine*).

* * *

One young thing to another: "While she's waiting for the right man to come along, she's having a wonderful time with the wrong ones".

(*Saturday Evening Post*).

* * *

AT A DINNER Party, the hostess, whose kittenish ways were most annoying, produced a family album. "This," she said coyly, holding up a mother-and-child picture. "is myself 28 years ago."

A guest examined the photograph, then asked slyly: "Who is the baby on your lap?

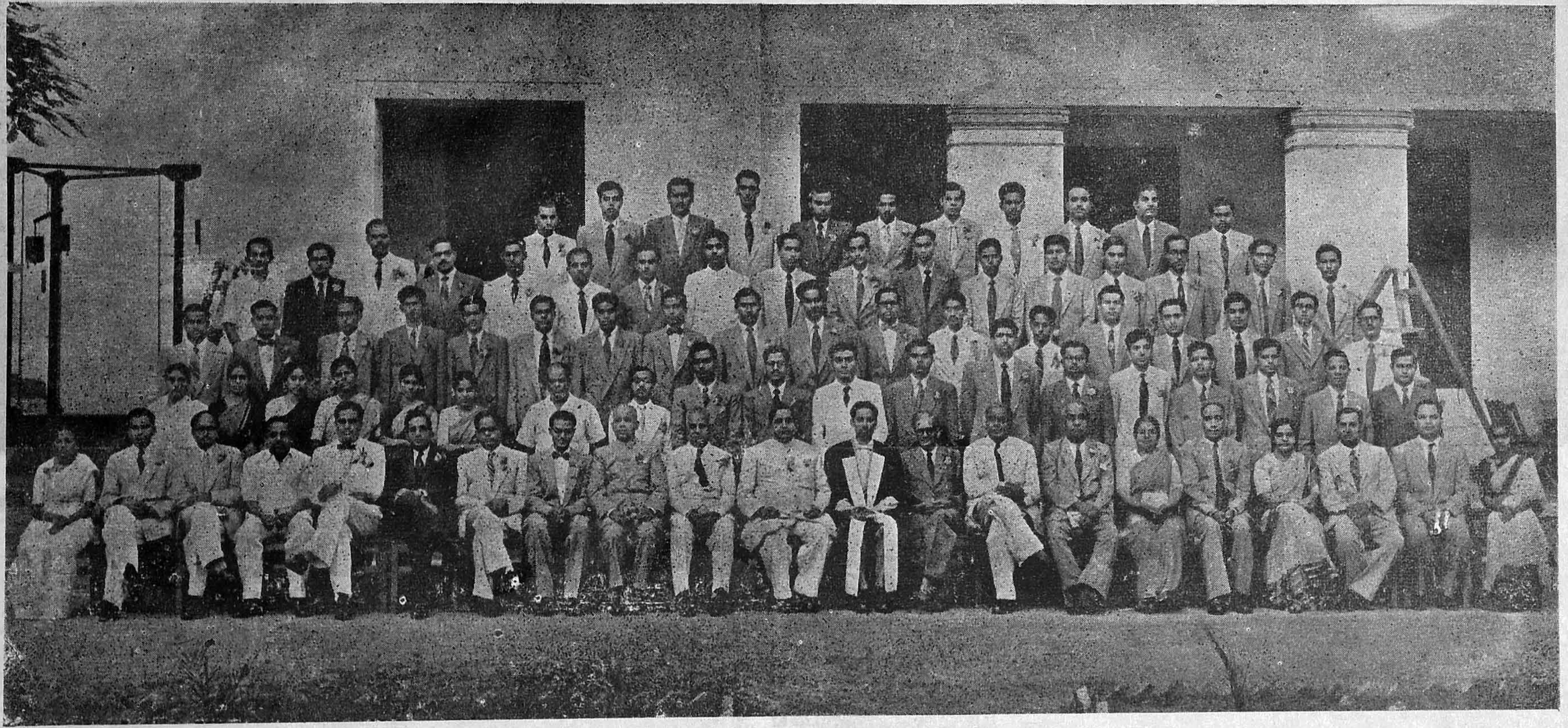
(*This Week*)

* * *

Dedication with a differance:

ROSEMARY and Stephen Vincent Benet dedicated *A Book of Americans* to their children thus: "To Stephanie, Thomas and Rachel, our other works in collaboration."

At last over the hurdles . . . . !



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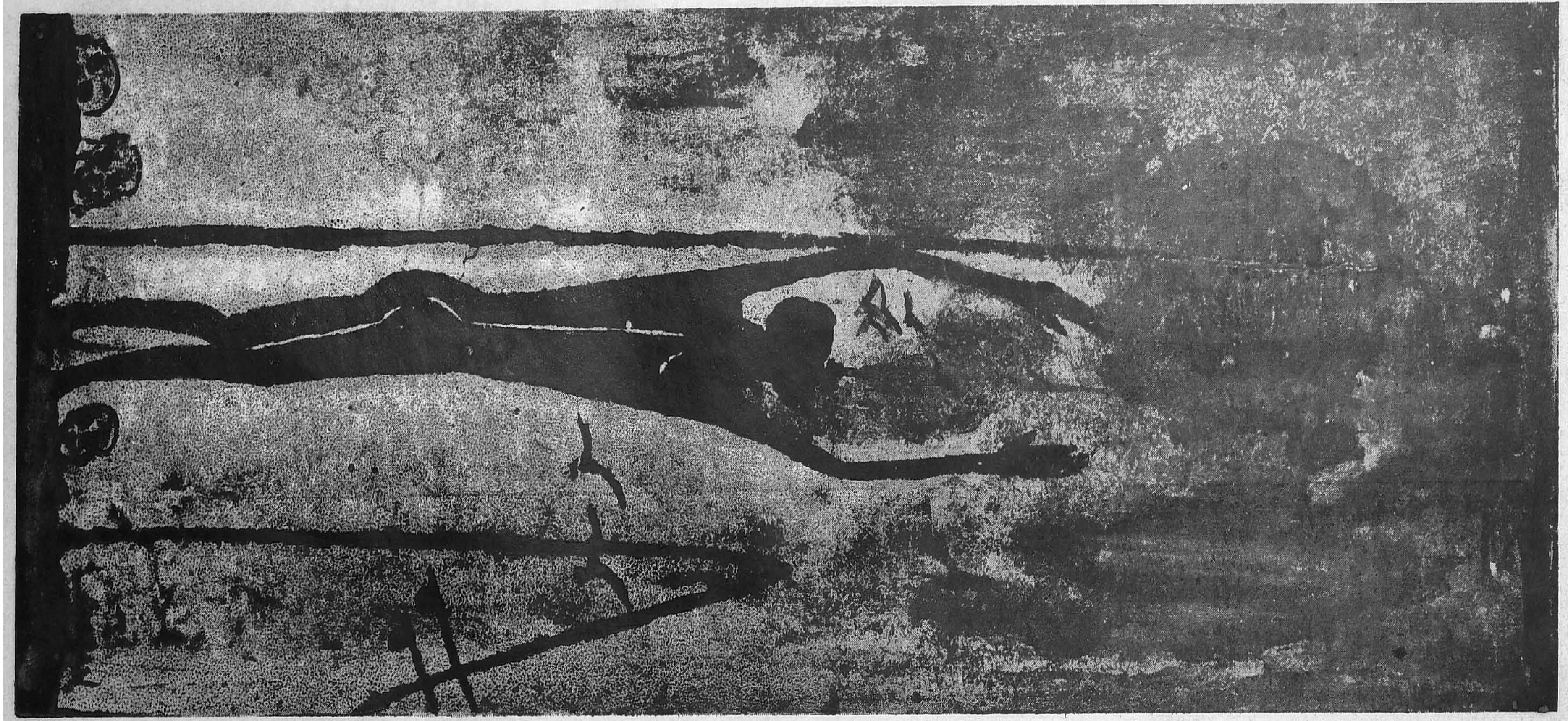

Bereavement

SAMUEL CHERIAN,
Final M.B.B.S.

It is night and the world is asleep...
I alone am awake, with tears in my eyes
and anguish in my heart...The night is
dark, as dark as the despair within me...
Even the stars seem afraid of it...so am
I afraid of this void within me, a void
filled with a thousand shrieking memories,
a million shattered dreams...As the flame
of love flickered and died, darkness closed
in, cold...smothering...relentless...

The wind howls in the trees like a lost
soul on the banks of the Styx,...and I am
lost in the ruins of my broken world...
once there had been laughter there and joy...
Now, only desolation, emptiness and solitude...
Once love had bloomed and touched my lips
with honey...now those lips taste only
the salt of tears...Once there were
dreams, desires, now, only one desire
one dream...death. I dreamed, hoped, desired...
loved and cherished...*and lost*...I have no
regrets...only memories....

The night has a thousand voices...and each one
seems to be saying to me, " Fool, where are your
dreams now, your dreams woven around a glance,
a word, a kiss..." But one lone voice within me
is crying out...crying out in the agony of parting....
and my sighs are but an echo of that agony, lost
in the wilderness of my heart...

May be, as days pass I'll forget all this...
for time is a great healer. But my memories
will remain, like an old wound that does not
heal...the wound will bleed, again and again,
bringing with it an ache and a joy that never
was to be. They will always be there—cherished,
locked away in the softest corner of my heart.
They are my only comfort thro' the long dreary
hours of loneliness and heartache that are my
shares of life...

Life was once a rosy dream ; but now the rose
has faded and fallen, leaving only the thorns,
to prick, to cut, to torment...Life has lost
its colour, its meaning, its purpose. It has
become one long wait for death to finish it
all—to stifle with his merciful hand the
struggling emotion surging up within me.

for won't takers of vitamins

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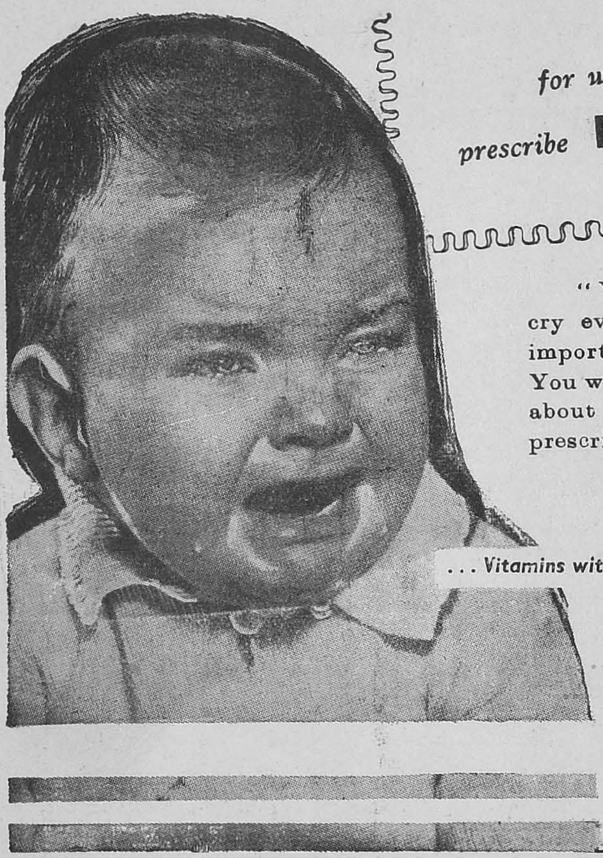

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The Most Unforgettable Character I Have Ever Met

By

G. LAKSHMIPATHY,

Medicine, Midwifery, Surgery.

Some knew him as Jambu and some knew him as Mr. Nath. Many did not know him at all and they were the most fortunate of all. Jambu was a simple man and all that he wanted from life were love, affection, security, devotion and a lac of rupees. His main ambition in life, so it seemed to his friends, was to live.

Jambu was born of poor parents in a little town about 10 miles from our place with a bad smell in his mouth, in place of the customary silver spoon. The baby was extremely funny looking and the parents would have even brought up the placenta, had it not died of some acute infection of the cord within 48 hours. Jambu's father, who had risen to great heights in life, as the local light house keeper, had one look at the child and underwent vasectomy on the next operation day. Jambu's father was a schizophrenic, who was convinced he was also the mother of Jambu, which naturally created lot of confusion at home. All that Jambu's mother wanted to get out of their marriage, was herself. Jambu's father thought a lot about his wife, but it was good for him she never read those thoughts. Lighthouse keepers were ill paid in those days and Lighthouse keepers' association could do very little about it. I am telling you all these to show how Jambu started in the lowest rung of the ladder in life, and stayed there.

I met Jambu first, when I was reading in I Form for a second time. I had failed purely on my merit, having got only 2½ (2 for attending the examination and ½ for not copying) out of a 100 in mathematics, a subject I never liked. "If A could do a work in 3 days and B could do it in 2 days, why the hell don't they go ahead and do it?" I used to wonder. I was not the studious type, and whenever I felt like reading, I used to lie down flat on the ground, till the nasty feeling wore off. Also, my great grandfather's death anniversary fell on the same day as my science examination, and I was so moved that words failed me. as also did the examiners. You can't pass out of any class, with 2½ marks in a subject, unless your father is the Headmaster, in which case you won't get 2½ (a vicious circle, as it were). On the day of my results, I told my father in consoling tones, that there was no need to waste hard earned money on new books, as the old books were quite sufficient. Father, who belongs to "Won't—make mark—in the—world—unless—you — do—at — school" category, started looking out for a tutor.

Someone (an enemy of the family I presume) recommended this Jambu, and when approached he accepted willingly. I still remember the day he came in. I was quietly sitting near my table, writing an anonymous letter to the class teacher, when someone looking like a cross between Ghengis Khan and Donald Duck entered. He walked in, sat on the mat by my side, and in a voice reminding one of a frog with Laryngismus stridulus, asked everything about me starting from my name, my marks, games I played, my bowel habits, whether I had lice on my head, if not why not, my bathing habits, why I used Sunlight soap and ended by asking me how many hours I devoted to working sums. (To which I said nothing, which was the correct answer too).

Jambu heard all the answers, smiled pathetically at me, and then he started.

"Mathematics" he said, "is an easy subject. Your father tells me you don't sit down and work. If you stop being contumacious, you are bound to get full marks." I proved a disappointing pupil because to this day I don't know what the word contumacious means. Jambu was not so bad as tutors go and as tutors go he went. One day he was teaching me Botany and was telling me about the bees and the flowers. One thing led to another (happily) and he was telling me something about a human zygote, when grandfather rudely interrupted and threw him out. To this day I don't know what happens to a zygote subsequently, and my grandmother when I asked her said she had never heard of such an animal in all her life. Jambu left, leaving a deep impression on me, on my back, with his cane, which he used very often.

After that I never moved with Jambu closely. I learnt a lot about him during the period he was my tutor. He was a quiet fellow by nature, but sometimes he was roused to great fits of anger, such that, his people never roused him, but let him sleep on till 9-30 in the morning. Jambu stood out alone in any company, because people preferred to talk to others. Even if someone spoke to Jambu, he never listened, preferring to keep his mind blank till the very end.

I thought Jambu might go in for farming, a subject he said he loved, because it was so vast covering acres and acres. To the great surprise of all, Jambu started writing books. His ambition to become an author got fired, when three leading dailies accepted his letters to the Editor. His first book was—"How to get rid of insect pests" and it was dedicated to "Anopheles puniculata". It sold a thousand copies, because its cover was smeared with fly paste. "A book you simply keep on your shelf" Jambu advertised "and find useful." "A book you won't keep down once you take it in your hands" wrote a critic—who could not appreciate the purpose of the flypaste. "A book you won't part with" wrote another "because you can't." Anyway Jambu got a lot of money with that publication, and paid up all his debtors except his grocer, whom he owed about 100 rupees.

Jambu's second book was "How to be a good mechanic" and it was dedicated to his grocer "but for whom" Jambu wrote, "I would have never written this book". The book told all about, "how to repair watches, how to get at your bidet, how to react if atomic reactor does not react, A world of facts on universal joints, little known facts about little known instruments" and so on. I was flabbergasted, because I never knew Jambu knew anything about any of these things. But two or three readings of the book convinced me that it was a big hoax.

In the chapter on "How to repair watches" or "On the run for 24 hours" (Jambu's own watch was an unique one, which never needed windings, because it never ran) he wrote "The word watch is derived from Greek "π ƨ O3π√" meaning 'Watch'. Suppose you drop it from a table, it falls down due to the action of gravity (discovered by Newton Sir Isacc—in his case it was an apple. Possibly the poor fellow never had a watch), and it stops running. Your watch repairer opens it up, gives the contents a nasty look, gives you another (as though it is stolen property) and announces in flat tones that the balance wheel is no more...He produces a good one from the shelf, waves it in front of you, and says it will cost you 5 rupees. You feel like grabbing it and running off, but I don't advocate this method unless you don't much care what happens to you. Well, what is this balance wheel and why did it alone alone break? You better ask your watch dealer himself. He only told you. I never said a word. My advice to you is don't drop your watches from tables hereafter. (If you don't want them, why not send them to my address?) If you do, please contact Zanni & Co. He supplies balance wheels at 40 rupees a dozen". The book sold only two copies;

one I purchased and the other one was purchased by Zanni, the watch dealer. The last book Jambu ever wrote, was a detective story with the smashing title " The man they could not arrest". The story started with the finding of the greater portion of the remains, including a cataractous lens, of one Mrs. Naicker, in a cesspool belonging to one Willie nicknamed the 'dough' (because he was never available when wanted). The reader is told in the next chapter, that it was Willie who committed the murder. The story goes on, thrill following thrill, until towards the end, the detective, locks up Willie in a public lavatory and informs the police. But he is unable to explain, in the usual fashion of all detectives, how he knows Willie to be the murderer, and so the police are not able to arrest Willie. The poor detective is arrested, and kept in Jail, for false charges against a harmless citizen.

But the climax comes in the last chapter, when the Corporation authorities file a charge against Willie, for claiming a cesspool as his own and Willie is fined heavily. The story ends in a happy note with the detective making good his escape from prison, and offering his daughter's hand in marriage to the bereaved Mr. Naicker. The book was not well received by the press, though Jambu sent them free as complimentary copies. Some even sent their copies back. " Best detective fiction in past 5 years" wrote one very old kind critic, whom Jambu owed some money, "If you have not read any during this period."

Jambu stopped writing books after that. But his articles kept meeting one's eyes and I once saw his fountain pen in a pawn brokers shop. Jambu realised that his life was a failure, and he took to smoking and drinking in a bad way. (There is no other way of taking to these things, I suppose). One often met him sitting on a mile stone, in one corner of the bazaar road, talking with his two friends (who used to keep standing throughout, as there was no other milestone for another mile). His friends were too well known rogues, and they were always discussing something very seriously with Jambu, as though one fine morning, they were going to explode the theory of relativity. But all that they exploded was the safe in Zamindar's house, which landed them in Jail. People said Jambu was connected with the affair, but when the Police Inspector went to his house and asked him he turned the tables (which quite upset the inspector, who was leaning on one side of it) by proving, that he was in a picture house on the night of the theft.

Days rolled on, and Jambu lived on, though nobody knew how he managed. When I asked him once, what he did for a living, he simply said " rhythmic breathing" which did not give me much information. One day, Jambu disappeared from our place, but his disappearance came to light only three days later, when the Municipal authorities wanted to shift the mile stone by a mile and did not find Jambu on it. Jambu's cousin immediately went and met the police inspector, with a photograph of Jambu and said " Mycousin is missing since three days. Here is his photo. I want him to be found immediately", The Inspector looked at the photo for a long time and then asked " Why".

There were various rumours about Jambu's whereabouts, but none were plausible.

Jambu came back three years later. I saw him sitting on the new milestone in the road corner, as I was returning home after purchasing some mangoes. I ran to him anxiously and asked him " where had you been all these years ? You went away without telling any of us. " I have been to Singapore" said Jambu turning towards me. "What were you doing there ?" I asked. " I was doing odd jobs here and there. Mine has always been a hand to mouth existence, you know" Jambu replied, removing a mango from my bag and taking a bite.

The news that Jambu had returned, spread like wild fire and was welcomed with as much enthusiasm. Jambu again became part of all of us. Jambu spent most of his time filling up coupons for crossword puzzles and sending them. One day he had spent nearly 5 rupees on this, and some of his friends were teasing him about this. " Your chances of getting a first prize" said one chap " Are the same as your being struck by lighting." Jambu never replied, not knowing what to, but waited patiently, Wonder of wonders, one fine morning, the news was in all the papers, that Jambu had got the first prize. His joy knew no bounds, and the very evening Jambu went to see his cousin to give him the happy tidings. That night while he was returning there was a very heavy downpour. Jambu took a shelter under a tree. The tree was struck by lightning which Jambu also very generously shared with fatal results. Jambu's cousin got a very big shock, because he was holding Jambu's hand. He survived, though nobody could explain the strange phenomenon.

Some one, once asked Jambu " What is the secret of your failure in life." Possibly my failure at success" said Jambu brightly. People like Jambu are born only once in a thousand years. Even that rate I think is too frequent.

Picturesque Speach :

He has a firm chin, but lately the firm has taken a couple of partners... (Earl Wilson).......

Some of the best boy scouts are girls.... (Groucho Marx).

* * *

Deft Definitions :

Married Couple : two people who sit in the balcony because they want to smoke.

(*Earl Wilson*).

* * *

Gentleman : Any man a girl hasn't been out with yet.... (Saterday Evening Past).

* * *

A New Yorker, pointing to a hillside field, complimented the New Englander on his corn.

"How do you plow that field ? It looks pretty steep."

"Don't plow it ; when the spring thaws come, the rocks rolling down hill tear it up."

"That so ? How do you plant it ?"

"Don't plant it really. Just stant in my back door and shoot the seed in with a shotgun."

"Is that the truth ? " asked the New Yorker.

"Hell, no. That's conversation."

(*Readers Digest*)

"O World! O Life! O Time!"

By

N. NATARAJAN,

II Year.

Morning in the bowl of night flings the stone that puts the stars to flight. The dawn sets the sun on wheels and paints the sable skies with blue and red and white. Hackles up, crows the cock ; and the early rays of light pierce the lattice and put the Day on.

Like bees, men buzz and move hither and thither. They set the ploughs on earth, and upon the parchments too. The first beams gleam on the sails as ships plod upon the sea. Fresh and gay, kids shoot themselves up in the crowd and shout and rout. The lark is on the wing. The singers sing, and in the gentle wind and rustle of leaves, flowers bend and sway their supple stems as they sun in the light. But there are the beggars too ; a weary lot. Very many cripples went to bed with thoughts of death. But the wake of Day, just makes - weakness weak and brings a day more of pain, to many, more days of distress.

The moving sun moves and melts the dew and burns in white and silver. Massy clouds amass and make all shapes. The man-simple looks in awe at the majesty of clouds. But the next moment they break and melt ; just a thin fleece remains. And so construes a man : all is change,

"There is no rest, no calm, no pause,
Nor good, nor ill, nor light, nor shade,
Nor essence, nor eternal laws."

Then comes the shame of Days and Time. The shakles of con- vention curb the flight of bliss. Bitter constraint and loathed melancholy put the thoughts of life out of tune. There is the relentless necessity which makes Liberty its lackey. Gaunt spirit scorn Delight and live laborious days. The jilts and snobs and the sycophants revel in the light of Day ; the jilted and the cheated crave and grope. Such is Life and so moves Time. And a man cries "The world is too much with us."

The rocking earth comes to peace after the quake. And there is an Evening in the Day too. The Gallant sun spreads gold amidst the clouds. That is the *coup de grace*. The strain of life is gone ; it's put on the snaffle. The choir of birds and the gurgle of streams win the ears of men. The whips and scorns of Time are quite forgotten for a while. Sweet thoughts flow like lovers' tale. Children play on the sand banks. They build their forts and lilt in joy. The preachers preach. Women swagger in Celestial beauty. The trysted lovers chat and in ecstasy, pass through a wakeful sleep. Moving waves of ocean heave and pause and having kissed the beams of moon melt in fleece. Souls, heavy with sorrow, just skip it all as they gaze at the clamouring sea. The fleecy waves dance like children upon the edge of ocean to kiss the shore and keep the white wreath of shell at the feet of mother earth. Fair glows the moon in the rent shroud of clouds ; and as its rays peep through the leaves, scattered, tranquil waters make a sheeny gleam with pictures unsurpassed.

The murky Night creeps in to hold its sway. Birds sleep at roost. Hollow selves of men, weary of the day lie, half dead. The pavement devellers feign sleep. Babes suck and mothers sleep as they suckle. Hanging clouds close on hills for cryptic revelry. Some where in the dead of night cries a dolt in orgies.

"While you live
Drink!—for once dead you never shall return."

But let's not talk of Night, let Night be Night. Let it keep its mist.

Time with every pace plucks a day. And so a day is gone—good many a day is gone, Days, sad and sweet, flourish ; and fade at the feet of strange No More.

"Music when soft voices die
Vibrates in the memory—

....

Rose leaves when the rose is dead
Are heaped for the beloved's bed."

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Harry Simpson Solves the Riddle of the Vanished Millionaire

By

List of Characters :—

HARRY SIMPSON	:	The uncanny detective ; When his mustache twitched...
GLORIA GREEN	:	His Secretary ; Efficient and eye-filling...
Mr. LLOYD	:	The missing millionaire ; Shrewd, but eccentric...
„ JOHN ASHTON	:	The adopted-son of Mr. Lloyd ; Always wearing the 'cat-swallowed—the canary' expression...
Mrs. LLOYD	:	Anxiety upto her neck...

I

The big brass-plate bearing the name of Harry Simpson of Simpson's Secret Service was resplendently glittering in the glorious shine of the morning sun. It was fixed on the swing door of Harry's outer office and every time Gloria Green, Harry's efficient and eye-filling secretary walked in and out gingerly, the rocking plate caught the sun and cast a powerful beam of rays playing out into the rollicking metropolitan city akin to a search-light used by the police to pin down the low-lying fugitives seeking the shield of darkness in nights. Any unwary onlooker would have been struck with wonder as to whether Gloria's long and equisitely polished fingers possessed eyes and brains of their own for she was sorting out the morning mail with such effortless deftness, all the time humming a hit-tune and glancing over the sensational news of the day, flashed in the bold head-lines of a popular news-paper that lay by her side.

The chime of the Big-Ben in the opposite Restaurent had just ding-donged away when a gleaming blue-'Austin A-40' slided smoothly into the curb and roared in high tone for a full minute before abruptly dying down. The busy-body in the driver seat switched off the ignition, withdrew the key, opened the door, leapt out of the sedan and slammed it shut almost all at once.-all in apparently one action. Meticulously clad in a tweed suit and felt-hat set at a rakish angle, he looked thirty years of success and satisfaction. Unconsciously the right wing of his handle-bar mustache gave a lovely twitch in appreciation of the glorious morning. This mannerism, but quite an attractive one at that, has been quite lethal at times for it was often the trigger-operation for letting out a sickening punch on to the 'tummy' of any 'difficult guy' who didn't particularly 'come his way'.

...."The tense detective relaxed himself as he percieved a second figure...

...the mystery is clear"...

His features seemed to have been chiselled out of determination giving him a formidable look of one who knows and means whatever he says and does. His square jaw, sharp chin, the long nose and bushy eye-brows matching the big and black frame of his eye glass all pointed to the fact that beneath his ordinary, harmless exterior lay an ocean of logical thinking, uncanny presence of mind and quick and decisive action. His knuckles were big, his eyes peering and penetrating and his gait was

quaite a dashing one. He looked around himself once, as was his habit, swung the key chain in the pivot of his right index finger, couched his lips in an inaudible whistle and finally turned about to disappear into the lofty entrance of 124, Pine wood Street. He wished and waived away the watch-man and lift-operator in one graceful nod and steamed up the stairs, skipping several steps, ere he reached the right corridor in the third floor and stood in front of the office of the Simpson's Secret Service. He gently patted on the back of the small errand-boy who bowed down a bit and held the door open for him to bustle in. He took off his coat and threw it at the hanger in the far off corner of the room where it precariously swayed but the loop stuck hooked alright. His aim with the hat was much better and it went whizzing its way before dangling on the hanger comfortably.

Gloria Green, a shade on the plumpy side was a beautiful, boisterous and brainy girl and she viewed this acrobatics quite approvingly and when it had ended, clapped her hands and said in a singing voice, "Good Day, Chief."

Harry Simpson exclaimed, "VIVA LA GLORIA ! As it appears in this bright morning, God is in His Heaven, and all is well with the right. Eh! That is bad anyway and you better tell me whether I can stand slump at present."

"Appearances are always deceptive, Chief." cut in Cloria and as the sleuth ambled to the favourite sofa and doubled into his favourite posture, she came close to him, and bent over the arm of his sofa.

Harry Simpson struck his lighter to the tip of his 'Lucky Strike' very elegantly and then sniffed at her amorous perfume and slowly drank in her shapely figure with its intoxicating curves, "You look gorgeous Gloria," said the detective and he tried to draw her close to him, but she backed away warning him with one finger on her ruby mouth and said, a mischivous glint playing in her eyes, "we do need an audience for witnessing your love-play, isn't it Chief? I am certain that the two visitors outside will adequately be rewarded for their long waiting."

"Sad interruption, Gloria, but with me it is always first served" and with a smile, he beckoned her to bring in the early visitors.

II

Gloria escorted a young man, attractive and aristocratic with movements so deliberate as not to distort the knifeedged crease on his costly suit. He had an air of smug complacency about him and his face always wore a cat-swallowed-canary expression. He stuck his gold-tipped cigarette to the corner of his tight-lipped mouth and extended his velvety palm to offer a grace-filled hand-shake to Harry Simpson. "Detective Harry Simpson, I presume," he talked with the least parting of his lips, My name is John Ashton." Harry Simpson nodded acknowledgingly and looked past him at the middle-aged lady who was following in the rear. "And will you please allow me to introduce my mother,....Mrs. Lloyd" continued Ashton with a melodramatic gesture.

"How do you do," Harry Simpson wished half rising from his sofa and entreated them to lake their seats, pointing to a short row of chintz-covered sofaarranged at the side of his big mahogany table.

Ashton veered round to his · seat and smoothed out his suit, as he sat down. The lady seemed to be greatly distressed, a couple of wrinkles bordering the corner of her eyes betraying her worry. A pearly-white necklace closing her neck did ample justice to her mature beauty and the vanity-bag bore out her class and culture.

Harry Simpson flipped the ash at the end of his cigarette, looked questioningly, and asked "Yes, Mr. Ashton-and Mrs. Lloyd, anything I can do for you?" Both of them

seemed to view the presence of Gloria with apprehension. The detective introduced her as his secretary who would take down notes of the interview. Mrs. Lloyd Could compose herself no longer. She blurted forth "something terrible has happend to us Mr. Simpson. My husband Mr. Lloyd, had disappeared-literarily vanished-since three days. We have no news of him and I am awfully anxious about him." She visibly sobbed and pulled out her hand-kerchief from the bag and bent down to hide her face by pressing into it and smother the escaping sound.

Evidently Ashton was not pleased with this demonstration and he cut in, "All right, Mom, will you stop all this and leave everything to me." He then turned to Harry Simpson and spoke in a measured voice, "May be it is all much ado about nothing, Mr. Simpson. Probably, it is after all a case of my father's inexplicable moods."

Harry Simpson raised his eyebrows, "Exactly what do you give me to understand by your statement?"

"Well" answered Ashton in a slightly harassed note, "My father is frequently afflicted with, what I may call, paroxysms of eccentricity", here he chuckled to himself ostensibly enjoying his jocular phraseology. "As for myself, I would have preferred to wait for sometime in anticipation of his return, which he is bound to, once the fleeting change passes off......"

Harry Simpson interrupted, "Provided my professional standing permits this inquistive curiosity, will you illustrate this with an instance, Mr. Ashton?"

"Sure, sure Mr. Simpson," hurried Ashton and after a thoughtful moment spent in caressing the bridge of his nose, continued, "Well, not long time before, I approached Mr. Lloyd, (you see, I am his adopted son) and asked him for financial assistance amounting to £2,000, when all of a sudden, he became red with rage and began barking and bellowing at me to go to dogs and things like that. His attitude was quite cold towards me since that time."

Harry Simpson asked casually, "How long before did this thing take place?" Ashton replied, "Perhaps it was one week or ten days previously."

"You were not any sort of a hang-over to Mr. Lloyd, were you, Mr. Ashton?-that is if you dont mind by interruption please," politely interpolated the detective.

"Not at all, not at all; I stand on my own independant business and there were not many occasions when I had to look up to my father to ward off any emergent claims," answered Ashton in an alarmed tone.

A quick, jerky movement from Mrs. Lloyd arrested the attention of Harry Simpson [and he prompted her to say what the matter was. She raised a pair of tear-filmed accusing eyes in the direction of Ashton and shrieked, "You are wicked. You worked him up by constantly pestering for money like a blood-sucking parasite. Why, you even went to the extent of threatening him that some bullies would bump him off, if he didn't help you to clear those credits."

There was a quick flash of something in the eyes of Ashton and Harry Simpson was quick enough to catch it.

"You are crazy, aren't you mom," Ashton nudged his mother. "Nothing of that sort ever happened, you know that. I paid those dues myself subsequently. You dont really conceive the silly idea that I would harm my father. You are on your nerves, mom. I did want money and certainly Mr. Lloyd would have advanced the sum if only I wasn't unfortunately imprudent to approach him when he was off-colour."

"By the way, why didnt you go to the police," Harry Simpson questioned Mrs. Lloyd.

"We want no publicity, do we mom? After all, what has happened to father? But for you vexing insistance, even this is unnecessary," replied Ashton in an irritated voice, indicating Simpson's office.

"Mr. Lloyd keeps a fat cash with him, I believe," asked Harry Simpson abruptly.

"True. My father doesnt have faith in banks. He keeps everything in cash with him, but very secure in as afe. Naturally the key should also be with my father, for it is also not to be found. But only my father knows about the secret complex combination to open the safe and hence there is not a slender evidence or a remote chance of any burglary or robbery."

Harry Simpson mused for a while and his mustache twitched a good bit.

Mrs. Lloyd broke in suddenly, "Mr. Harry Simpson, I offer you your stipulated retainer and entrust you with the safegaurding of the interests of my husband and investigating into his mysterious disappearance."

Harry Simpson sounded casually. "Nobody else in this world knows about the secret combination to the safe. Is it right, Mr. Ashton?"

"No body else," came the reply with an unmistakable tinge of disappointment.

The prodigious mustache of Harry Simpson quivered. "You will please leave your address and the retainer in the hands of my secretary. I would like to make a personal inspection of your place and probably might stay in your place, to-day, if it is necessary."

"Oh ! Nothing will afford us more relief, Mr Simpson and we would be mighty glad if you care to dine with us today" invited Mrs. Lloyd.

"That is topping. Thank you very much. I am pleased to have dinner with you in your place" accepted the detective and at the same time suggested the end of the interview.

Mrs. Lloyd blew her nose once and thanked him with great effort. Ashton looked greatly weighed down, gave a stiff bow and held out his hand in a half-hearted hand-shake and finally left the room. Harry Simpson drew in his final smoke and as he slowly exhaled, flicked the stub into one corner.

III

It was 9'o clock when Harry Simpson's blue roadster pulled into the portico of the "Primrose Palace". The eccentric but shrewd millionaire, Mr. Lloyd was manifest in all his subtle touches about the concrete drives, the mowed lawns and the sumptuous chrysanthemums. The detective appreciated the healthy air about the luxurious mansion as he ascended the front-steps where three people were waiting in welcome; Mr. Ashton, Mrs. Lloyd and a stranger, a queer-looking elderly man presenting a strained exterior. His face accommodated a pair of glittering eyes and an acquiline nose, the rest of the place abounding in a notorious growth of hair. Ashton came to the rescue of the perplexed Simpson by introducing him as one Mr. Head. "My father had been talking for some time prior to his unaccountable disappearance about Mr. Head as his most personal friend. He told us that he had extended an invitation to him too. But unfortunately, Mr. Head came here eagerly, but only to see no more of his intimate friend than the vacant apartment. Actually it is Mr. Head who suggested to us that we should entrust our interests in your capable hands." And turning to the old man, he proceeded, "This is the detective Harry Simpson who has agreed to help us out of this fix"

"It is kind of you, Mr. Simpson. I am so pleased." "The pleasure is all mine to be of service to you Mr. Head"

They shook hands heartily and Mr. Head seemed only too anxious to find something done in the case of his friend. But Simpson instinctively sensed that there was no love lost between Mr. Head and Mr. Ashton. They also appeared to be eager to convey something confidential to him.

Harry Simpson followed his hosts into the spacious, air-conditioned drawing hall, decorated with large family portraits. There were also little touches of floral decorations that made the place really enchanting. The detective's eyes roved from place to place till in the end, he said in a soft and slow voice "This is an extremely nice place, Mr. Lloyd. I am very grateful for your kind invitation. By the by, I want to talk privately with Mr. Head and Mr. Ashton", and held them out of the corner of his eyes "I want to speak to Mr. Ashton. first of all", spoke Harry Simpson after pausing for a minute.

"Mr. Ashton, You wanted to say something?" questioned Harry as they were left alone in that lofty drawing hall.

"Yes, Mr. Simpson, since it is my duty to give my utmost coopperation to you in the matter of investigating into my father's disappearence, I am bound to confide with you certain facts which may appear quite strange. I would particularly state that I don't like Mr. Head whose antecedents are not above suspicion as far as I am concerned."

The detective raised his eyebrows, "This is rather interesting and I appreciate your spirit. But there is a question which I like to put you and which demands your careful reply. When did your father first mention about his friend and have you discovered any pieces of correspondence between them?"

Ashton seemed very much encouraged. He replied, "It is very curious that my father remembered Mr. Head only last week though he professed him to be his most personal friend and it does not quite fit in with the things, as my father's file fails to show even a single written communication from him."

"Was it not subsequent to your quarrel with Mr. Lloyd?" emphasised the detective and Ashton nodded in affirmative cautiously, in his turn.

Mr. Head seemed very eager to tell Harry Simpson of his suspicions about Ashton. He told that in his last letter a week ago Mr. Lloyd had written to him about the son's threat. But the detective surprised him by requesting him to produce the latter. Mr. Head seemed terribly embarrassed and his reply was neither plausible nor satisfactory.

When this short and intriguing interview had terminated, Harry wore a puzzled face and appeared to have put on his thinking cap for a while. Then he lighted a bit and thumped the back of the chair with his hands muttered to himself, "That should be it, let me see".

He came out of the hall when Mr. Lloyd solicitiously spoke, "Let us talk over the dinner table, but I am so sorry that this calamitious air around here might mar whatever delicacy is served by this unworthy household".

"If you will be kind enough to pardon me, Mrs. Lloyd, I shall like to do one or two things before the dinner. I want to inspect all the apartments as a matter of course and do a routine check up right now. It wouldn't be long before I join you all in the dining hall."

"By all means, Mr. Simpson. We are glad to show you all the rooms. Shall we get started?" volunteered Mrs. Lloyd.

"I wouldn't care to trouble you, madam. If one of your servants escorts me, that will be all to it. You should forgive me for I want to make some personal investigations."

"In that case, Nicholas, the chaffeur will take you around and I shall send for him

immediately. We will wait for you in the dining Hall."

"That will be fine. Thank you very much."

IV

Nicholas in his white uniform fitted with shiny brass buttons, led Harry Simpson inside and showed him first the Study Room, exclusively used by Mr. Lloyd. This was an attractive apartment, of course, smaller than the drawing hall, but, on all the four sides were found tall book-cases filled with works of all the authors, young and old. On one side it opened into the drawing hall and by the other end it communicated with another room, which, later on, the detective found to be Mr. Lloyd's retiring room. In one corner of the study was fixed a large safe and even a 'a-bird's-eye-view' was sufficient to convince Harry Simpson that Ashton was telling the truth when speaking of the Safe. It was a massive one and was proof against any type of assault.

Then they stepped into a well-lit corridor. On either side, there were two well-furnished large rooms. Nicholas turned to the right and opened the large, varnished doors of the first room and announced that to be Mr. Lloyd's retiring room. It was as Harry Simpson found out, communicating with the study. He made a careful scrutiny of this room. Everything was neatly arranged and all the sundry things were in their proper places. There was no displacement of any sort The room was tidy and clean. The bed was unruffled and the dress hung orderly in the wardrobe. Harry Simpson examined the ash-tray found on a stool near the bed-side and looked curiously at some old cigarette stubs in it with increasing concern. The detective removed his spectacles and thoughtfully wiped it with his silk hand-kerchief before putting it on again. His mustache curved once more its right end.

As he came out, Nicholas informed him that the next room was occupied by Mrs. Lloyd who used it as her bed-room.

"That is all right. But what about those two rooms on the opposite side?" queried the detective.

"Oh, Yes, Sir, the one at the other end belongs to Mr. Ashton and this one facing Mr. Lloyd's bed-room is used by the guests. At present Mr. Head is staying there" replied Nicholas.

"I like to see those rooms too," said Harry Simpson and followed Nicholas into Ashton's room. He made an intense examination of that place and afterwards entered the Guests' lodging. He ransacked the whole place and in one far corner, he picked up a small cigarette bit. Wiping his face, he said with obvious satisfaction, "Thank you very much. I think I am through and shall join my hosts now". He was on his way to the dining hall, and momentarily stopped and paused before the family portraits hung in the drawing hall. He examined Mr. Lloyd's picture with very curiousattention. There was another of his lovely mustache twitch.

Harry Simpson had a sharp rival to his keen brains in his tasty tongue. He could appreciate good food and do full justice to it.

He couldn't help saying that his belly had a real good day. Then he started conversing about Mr. Lloyd over the dinner table. He particularly asked Mr. Head many details of intimate nature regarding the vanished millionaire to which the venerable gentleman obliged too willingly. He put in a couple of questions of enquiring nature about Mr. Head himself but strangely the answers given were vague and evasive. The detective observed significantly, "Why! Mr. Head seem to know about his friend Mr. Lloyd than about himself?!" and laughed high-heartedly.

"Mr. Lloyd suffered from a sort of chronic asthmatic ailment, I suppose," speculated the detective.

The surprised Ashton replied, "That is true, anyway he is under that obsession for a long time and used all the precautionary measure to guard himself though it was ridiculous and sometimes very exasperating too."

Some questions of searching nature were put by the detective regarding the phone-calls, attended or unattended. Then he nodded his head as if he had come to some conclusion. "I thought as much," observed Harry Simpson and the dinner also drew to its close. Then they all moved into the drawing hall for a smoke and Harry Simpson produced his cigarrete-case and offered one for the elderly Mr. Head. But the latter waved his hand and said, "No thanks," but the former instinctively felt a hesitation on the others part, just like a school-boy who denied his father's incrimination to hide his smoking habit. "Probably you are a pipe-smoker," helped the detective "No, I dont smoke," said the old man. "Oh! I see," replied Harry Simpson and yawned twice apparently feeling very sleepy and as he tried to stifle them his mustache again had its spasm.

"Good," said Simpson, turning to Mrs. Lloyd, "Than you all very much for the lovely dinner. I beg your leave to let me stay to-night and I shall use Mr. Lloyd's retiring room for this night."

"Will it be alright for you" asked mrs. Lloyd.

"That will be ample for me, Thanks, madam", replied the detective and purposely raised his voice a bit to sound decisive as he proceeded, "As things stand at present, Mrs. Lloyd, I believe I will investigate the safe by shooting it open to satisfy myself about the security of the cash and shall get the police in the job if it is otherwise first thing tomorrow morning, it if doesnt throw any further light on the case and proves uneventful. I believe that is all to it." He let himself yawn thrice more and apologised himself. "I suppose I had a real good day. I fear I am going to sleep like a wooden log. I shall retire now. Goodnight every-body" bade Harry Simpson meeting them all straight in their eyes and gave them each a courteous bow, but didn't fail to catch a glimmer of transient fear in Mr. Head and Mr. Ashton.

Mrs. Lloyd jumped ahead to accompany the detective and when she left the room she pleaded, "You should somehow assure me about my husband's safety. I am scared. Do you think nothing untoward had happend to him?"

Harry Simpson reassuringly smiled, "Have confidence in me. Mr. Lloyd is safe and sound till this very moment and I guarantee to guard him from harm hereafter. Cheer up and very soon the riddle will be solved and I wager your retainer for it. Good night, Madam Lloyd. Rest well and please dont bother about any-thing."

"Good night, Mr. Simpson. Your words do encourage me." She turned round and made a final bow before leaving.

V

He pushed up one of the french windows in the room and thoughtfully blew out smoke rings. He would have stood there quite a long time musing to himself before some foot-steps were heard behind him and he turned to find Mr. Head. The elderly man braced himself and said in a concerned tone, "You are sure to open the safe tomorrow. Mr. Simpson? Probably if everything is still all right and my friend happens to reappear, I am afraid he would not like it." The detective replied in a firm voice, "I see no better alternative in this case," and with a quizzical smile added, "I think it has to be done in the best interests of Mr. Lloyd" and abruptly he ceased speaking and was listening outside with great attention for a moment. Then he eased himself and called out at the same time, "You may come in Mr. Ashton." Mr. Head was startled to find Ashton coming in to the room though

the latter appeared not less shocked to find that his eavesdropping has been discovered. Harry Simpson posed dramatically and declared, "If it is the safe that is worrying you too Mr. Ashton, my decision which you just overheard is going to be final." He relaxed himself and bowed down a bit. "That will be all I think, gentlemen. Goodnight." He turned once more to gaze into the dark lawns with his attention fixed on the retracing steps of Mr. Head and Mr. Ashton and heard the doors closing behind them.

He threw his half-smoked cigarette and swung around. He hastily started preparing his bed. He arranged his pillow one below the other in a row and covered them into a model of Harry Simpson for the eyes of the wicked and the curious.

VI

He looked at the watch. The time showed quarter to twelve. He could hear Mrs. Lloyd snoring in her abjoining apartment. He picked up Ashton's thought-weighed foot-steps pacing the floor in his room. Satisfaction lighted on Simpson's face as he carefully recongnised a peculiar and familiar aroma drifting from the room opposite to his own, in which Mr. Head lay on his couch straining his mind. Harry Simpson loosened his tie and removed the shoes. He kept the doors of his room well open allowing the full blast of the cold wind to blow through. He noiselessly opened a little the communication door to the Study and slipped past it, in such a way that the latch carefully fell back into its place. His acute vision could accurately locate the various features of the extensive room and trodded softly to the corner where the safe was. He sandwitched himself in the space behind it and started a long and patient watch with all his nerves tense.

As his watch ticked away the night, he grew more and more vigilant and his senses sharpened to the slightest disturbance. Many a time he cursed himself for forgetting to bring his cigerette case with him, but he was not prepared to risk his chances by trying to retrieve it. As he become more and more watchful his eyelids ironically became increasingly heavier.

In his uncontrollable drowsy state, Harry Simpson couldn't be exactly sure whether the distant clock struck one O' clock or half past one when he heard a creak in the front doors. He jerked himself back to sharp consciousness and found a veiled figure moving in stealthily towards the safe. It's unhesitating movements showed that the room was not unfamiliar to it. It passed before the safe and listened to any sound from the adjacent room wherein it had made sure that the weary detective was well asleep. It fumbled in its pocket for fishing out something, probably a key.

The tense detective relaxed himself as he perceived a second figure similarly veiled stealing behind the first and slowly raising a sinister club. The moment had come. The mystery was clear. The detective shot out from his ambush like a pebble from the catapult and landed a terrific punch on the pit of his stomach. The deadening impact of the abrupt assault caught the buckling figure unawares and Harry Simpson finished his joy by a firece hook to the chin with his left and a thudding job on the temple with his right The writhing figure retched three times and gave a ghastly groan before collapsing crumpled on the floor. The detective clasped the hand of the stunned and stupified onlooker near the safe and switched on the light.

VII

Mrs. Lloyd ran into the room with her nightgown carelessly thrown about her. She let go a sickening scream on seeing the macabre sight. But the detective was wearing a triumphant look. He advanced towards her and said; "Iam sorry to spoil your sound

sleep, Mrs. Lloyd, but yet, if you trouble yourself to unveil the unconscious figure on the floor, I think you may recognise your son Mr. John Ashton."

Madame Lloyd was surprised and shocked to recognise Ashton inspite of his battered face. She commanded the detective almost in hysterics "What is all this about? What happened to my husband? Who is it that you are holding by your hand? Oh! the suspense is unbearable."

"Madame Lloyd, beg you to cool down and collect yourself. The surprises never come single" and as he turned to unfasten the veil of his prisoner, Harry Simpson announced, "let me introduce the distinguished Mr. Head."

These startling incidents of the night had gone far beyond the lady's endurance. She shouted, "Of all the people on the earth! Mr. Head! Is there no end to all this? Well, Mr. Simpson, how are the surprises of the night going to yield you the mystery of my vanished husband?

"One moment lady" composed the detective and caressing his mush-tache addressed Mr. Head, "I leave it to you, Mr. Head. Will you give the low-down of this mystery by yourself lest I do my job as the detective." The silent and embarassed Mr. Head was non-plussed. He shifted his stare from the detective to Mrs. Lloyd and carried it over again. He heaved a sigh and remained silent. Harry Simpson smiled a little and said, "In that case, Mrs. Lloyd, you might succeed by pursuading your husband to drop his alias."

The startled lady looked at the strange man beseechingly as Mr. Lloyd removed his hairy mask and advanced towards his wife and imprinted on her puzzled face an affectionate kiss.

VIII

"I am ready chief!" announced the comely Gloria Green as she attractively poised herself with her note book placed on herlap, while her beautiful fingers held a long and sharp pencil. Harry Simpson winked at her and smilingly said. 'I cannot quite place it, Gloria, what is so arresting and compelling about you, but whatever it is, it is nothing but very devilish. I wonder how I came to select you as my secretary when you are indeed such a terrible distraction!"

"Shall I start taking down this bit of poetry too, My Lord Byron" mischievously asked Golria and ducked in time to dodge Simpson's playful slap aimed at her cheeks.

"Let me only finish my case first and I will attend to you in greater detail," warned the the detective and as he proceeded his tone of frivolity warmed up into one of business.

"Well! I was initially inclined to think that Ashton would have disposed off his father. Mr. Lloyd had evidently disagreed with his son who had even threatened his life and soon after, the millionaire had vanished. But there were a few snags in this. Though Ashton appeared outwardly reluctant to place the case in my hands, I knew it was only an affected one. On the contrary he was himself clearly puzzled about his father who had just melted, as it were, into thin air. On the top of it the key to the safe was genuinely missing and I was convinced that the secret of the combination to open the safe was safe with Mr. Lloyd and nobody else was aware of it. It didn't make sense that Ashton did away with his father without the means to possess the money. There was another possibility. Somebody connected or unconnected with Ashton could have kidnapped Mr. Lloyd and then tried to demand a wholesome amount as ransom. But eventhough three days had elapsed subsequent to the disappearance of Mr. Lloyd, no such claims were put up and I made sure of that by enquiring into the telephone calls. Further, when I inspected Mr. Lloyd's bed room, what struck me was its spick-and-span condition. There was no evidence of struggle or force. Then the light began to dawn on me. Why! It looked as if

the owner had taken elaborate pains to prepare for his transient non-existance. Only his ash-tray contained some cigarette bits, probaly because Mr. Lloyd was thinking unto the last minute. Here I got the 'essential clue' tc this case. When I examined the stubs I found them to be a special brand of anti-asthmatic cigarettes coming into vogue at present.

"In the guest room where Mr. Head was staying, I discovered a cigarette bit carelessly thrown into a corner, probably in a hurry. I was surprised to find an old-fashioned gentleman smoking cigarattes Usually all these people use pipes for their smoke. I was astonished when the stub proved also to be of the same anti-asthmatic variety used by Mr. Lloyd. Then I looked carefully into all the family protraits and found what I expected. Mr. Lloyd was of the same stature as Mr. Head and he had a clean-shaven face. The startling reality came upon me that Mr. Lloyd, for some reason, was masquerading as Mr. Head. I put intimate questions about Mr. Lloyd which were all easily answered, but replies to the searching enquiries about Mr. Head were always evasive and contradictory. Then I offered my cigarettes to the disguised Mr. Lloyd who could not smoke them and also dared not to enjoy his favourite smoke in public. There was no other way for him than to pretend and tell a lie that he was not addicted to cigarattes.

"What was behind the strange logic of Mr. Lloyd to take to this disguise and cause himself to vanish temporarily, I wondered. He was not only eccentric, I bore in mind, he was shrewd too. Mr. Lloyd could not take legal action against Ashton because there were no concrete complaint or tangible proofs that would stand in the court of law. But he was afraid to be in the open and be an easy target to his foe. Then he conceived his brilliant strategy to escape from everybody's reach, but still stay right in the house and safeguard his estates. He carried it out creditably too. But Ashton started being suspicious about the mysterious Mr. Head. Though he didn't have the faintest idea that the latter was none other than his father Ashton was afraid that he might be a crook or really a friend of his father who had sent him to protect his interests while hiding under-ground. Ashton was shadowing Mr. Head in all his movements and at the same time he was also under the constant observation of the latter. Each of them tried to fasten guilty incriminations on the other and the same act opened my eyes to the real state of affairs in this interesting and intriguing case, as the cases of millionaires usually are.

"My strategy was this I wanted to catch Ashton redhanded. But I had to provoke him for that. He wouldn't make a move himself. Therefore I caused a stir by surprising them with my announcement that I was going to open the safe and calling the police. I knew both the father and the son would be in a fix. Mr. Lloyd would land in a rough spot because of his misimpersonation. Ashton would be in trouble being easily the suspect No. 1, *Prima Facie*, to the police and they would drill him regarding his father's disappearence. I was pleased at the prospects. I expected something to take shape that night though I had the least idea what it would be!

"What caused Mr. Lloyd to approach the safe that night and open it, I can only conjecture. Probably he wanted to steal a march over me by removing some cash and leave it in the possession of Ashton without the latter's knowledge and thus show him in a poor light, and if possible, thus provide a motive for the police to pinch on Ashton. Then Mr Head could take his leave and Mr. Lloyd would return apparently after his 'mood' had left him. But Ashton as always followed Mr. Head into the study. Ashton could see Mr. Head about to open the safe and thought he could snatch the opportunity and help himself, But I was there all the time to make things happen the way they should. So, Gloria, that is what happened in this extraordinary case of the double-faced millionaire."

Harry Simpson relaxed and smiled. Gloria Green ceased har engrossed writing and stared at her chief with wide eyes.

"Come near me Gloria", invited the detective.

"Wait a minute, Mr. Holmes, let me write the finish to this ingenious case of yours and ...."

But she could say no more as the detective printed the 'finis' to his case in the appropriate way-he sealed her hot lips with his own; and Harry Simpson's mustache violently quivered.

A WOMAN WITH A PAST

By

T. K. GURUMURTHY,

II Year.

It was the hour before the sunset. The sea was endlesly kissing the shore and showed no sign of satiation. This ceaseless activity was viewed with indifference by the people gathered on the shore. Some of them were engrossed in idle conversation; some were munching away at peas and nuts; some were making curious figures on the sands; and at a distance could be seen a pair of lovers. Yes; Krishna and murali were seated side by side and talking away the usual language of love.

Krishna was in her early twenties and though not beautiful, she was charming to a degree.

Murali, was a year senior to her. He was cynical in his observations and so an enigma to all his friends.

Yonder at a distance a ship was sailing. Krishna fixed her gaze on her. An intense feeling of pain and anguish rushed forth into her bosom and her cheeks were florid and red. Her face depicted harrowing reflections. There was a lull in the conversation. Murali was struck by the sadness of her looks and asked her, "What troubles you my dear"?

"Oh nothing Murali" she replied evasively.

Murali detected some strange drama of events had occured which Krishna was concealing from him. "No Krishna" he persisted, "Something has happened. Your face betrays your feeling and you look sad."

"Well then Murali, how would you great truth?" she asked.

"Well truth is dull and matter-of-fact. Lies fascinate me. It is an expression of imagination. Come along dear, what is it that makes you sad?"

"Nothing serious. It relates to my escapade from Burma"

It was the year 1942.

Burma was in the convulsions of war hysteria and hell was let loose. People died for no purpose and through no fault of theirs. Millions perished to save the pride and prestige of the few politicians who governed their destinies. War, the most primitive from of revolt, was going on in an organised scale. Primitive man fought animals in a struggle for existence. But now Man was killing Man and War had no meaning, no purpose.

The whole familiar daily round became unfamiliar and Rangoon was not itself. It had emptied. Business was at a stand still. The even tenor of life was subdued, and the harmoney and rythm of life was disturbed. War changes all things. It has a very curious effect on people-It blackens the minds and hearts of men. War spreads tragedy and suffering blindly-it shows no prejudices. And every man, woman and child threw himself into a fight against Death and Destruction so that the beauty and harmony of life is not denied them.

Parts of the city of Rangoon were reduced to shambles and the cargo of Carange was mounting. The air raids were incessant. Shelters were inadequate to enable the people to escape from the rain of deaths from above. And it was a red rain. The serene starry sky was lit with fires and the drone of the enemy plane struck the funeral march to many a man and woman.

The flare and noise became a normal part of of life. The siren warned the arrival of the

Japs-the messengers of death. Then came the relentless heat of noise from above, the flash and bang of a bomb and later the sharp bark of the anti aircraft fire in which many were killed and many more maimed.

Indians in Burma were streaming out in the tens and thousands by ships and land to find redress and relief in India. Among them was Krishna. Her own parents were victims to the incessant air-raid. Fate had deceived her and made her an orphan exposed to the mercy of the world and the lewdness of its men.

The one course left to Krishna was to leave for India and seek the protection of her grandpa. With the little belongings she proceded to the wharf where the last ship to India was anchored.

At the wharf was a mighty concourse of humanity, all trying to set Fate and Death at defiance. They knew the value of life and so were prepared to buy it at any cost. It was impossible for the ship to carryone-tenths of them. And where was the hope of Krishna to get a place in the crowd ?

Just then a sailor insensitive to the pains of his fellow beings was strolling around. Krishna attracted his attention by her meek presence. He went near and accosted her. She told him what she wanted. There was no sympathy in his eyes. Those eyes had witnessed suffering humanity in all its various and dreadful phases and this was nothing to him. His best feelings were blunted and warped and the generosity of his heart was destroyed. His looks and gestures were canine in its instirct and intent.

"Well", the sailor replied "It is in my power to help you, though the odds are heavy. But on one condition."

Krishna's eyes shown with a glitter of hope. She was prepared to pay any price at the moment. She instantly saw that a cruel fate had momentarily placed her in his power which he could use or abuse at will.

The sailor with a quizzical half-smile said "it will cost you something".

"How much", asked Krishna who was prepared to pay all the money and gold she had. The sailor eyeing Krishna with a smile said "you needn't have any money or gold to pay me" The words were enough and she understood him. His gestures and looks were by themselves more eloquent than his words. She was staggered and felt the ground under her feet slipping away. He was demanding her of the brightest of all jewels that a woman cherishes-her chastity. But she had no alternative. She had either to choose the sailor or else die in a land unprotected and unknown.

"I could not rofuse, neither could I open my mouth to say anything" continued Krishna to Murali and "he took my silence for Consent" Krishna was looking into Murali and he himself was thoughtful.

Krishna interposed "well Murali, I do not know whether you will approve of this. But I could not dare face death. I wanted to live"

"That's it. Everyone must have the zest to live. To live any how and not be fettered by Religion or Society or Nature. The persistence of Life inspite of the ravages of nature is itself the Cause and Effect of Evolution. The basis of evolution is continuance of life", said Murali. This soothed Krishna's anxiety.

"To think of suicide......"

"Is sin. No one has any justification in trying to finish the work intended for nature. I abhor suicide, not that it is cowardly. Amongst all the sins suicide is the only sin one should avoid."

These cynical expressions by Murali reassured her, yet she was tormented by her own feelings of disgust and regret. She continued "One thing that sometimes worries me is that even my faith in Religion and Morality could not prevent me from desisting the sailor's offer.

"Oh", replied Murali", Religion and your principles of Morality and Chastity should only help you to live a fuller life. In fact that man should fetter a woman to himself on the basis of chastity is only an indication of his possessive nature and not his faith in them. Morality to him is only superstition."

"What a creature, this woman."

"Plaything of man. All our attachments is primarily out of her physical appearance and woman to a man is merely an instrument of pleasure and pastime.'

"You don't believe in Love"? asked Krishna with a twinkle in her eyes.

"I belive in love only when its basis is Lust. Only on the basis of Lust, love lives and grows."

"Well darling, you talk like a cynic"

"But, dearest. I am not a cynic by faith, but a cynic by reason and I don't believe myself. Cynicism is a mask-a dark glass worn only to ward off the heat of truth. Now darling get along with the narrative". Krishna felt relieved.

That day, the sailor using his influence conducted her to the ship and stowed her away in a corner. He took some money from her and asked her to wait for him and said that he would go to the city and return for the night since the ship was scheduled to set sail at midnight.

Every moment was an age of agony to Krishna, lest he should come and claim her only possession which no woman character ever wishes to forsake. She surveyed the ship. People were stacked into it and their faces showed anxiety and struggle. She felt she was lucky in getting a place without any trouble. And why? Her flesh. Yet she regretted her hasty decision. It was already night. At the sight of every sailor she startled. Yet she was anxious for him, and waited for him,

She heared the noise of the anchor being pulled away andthe time was nearing midnight. And soon, the ship set sail without the sailor.

"What? you mean the sailor spared you?" roared Murali.

"I do not know whether he wished to. But he didn't return".

"What happened to him?"

"Well that is any body's guess. He migh have been shelled or else got so drunk that he failed to return."

Murali's face was flushed. Neither talked The tower clock near-by rang eight strokes.

Krishna asked "What is it Murali? why this sullen silence?"

Murali just smiled. This disarmed her of her sense of relief "Murali don't you believe me?"

"I wish I cannot. Lie fascinates me more than truth".

"Why do you wish it to be a lie?"

Murali with a smile said "A woman with a past is more interesting to me"

"And to me a man with a future".

"Very well Krishna, then we agree. Don't we?" queried Murali. But before she could answer her lips were sealed by his and that it self was an eloquent reply.

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The Associate Editor's Log-Book

By

M. GOVINDARAJ.

The month of June with its blistering sun and spotless skies ushered in the new academic year. The weather was the only topic to be talked about. Life was extremely boring.

It needed the General Elections to kick the lethargy out of our joints. This year the elections packed a lot of enthusiasm. Quite a few really lucky candidates got through unopposed while the rest of them fought it out, every inch of the way. The candidates fidgeted around with ghastly smiles on their faces. They feigned friendship with perfect strangers and talked and talked till they got blue in the face. The college looked like an art gallery with multicoloured posters staring down from vantage points. And one fine morning they were torn down, a few promises were broken & there was complete confusion among the students about who was governing Stanley-the Dean, the Vice Principal or the college Sergeant. Though keenly fought, the elections provided no major upsets, with most of the fancied candidates winning through. One woman prevailed over two men, which goes to show that when a man and a woman fight, the women are for the woman and the men are for the woman or with the women who are for the woman. One candidate flooded our waste paper baskets with a sensational pamphlet and nearly got away with it. We for the moment, wondered whether we were in Stanley or the Hyde Park. One fact shone through for everyone to see. There are a lot of things, desirable and otherwise, which influence the voter's mind. On the whole it was a very pleasant affair with all the excitement. But coming to think of it wasn't it all making much ado about nothing?

Mr. SAMUEL SUSAY,
College Sergeant.

The First Sergeant of the College.

There are better things in this world than a hangover of a big occasion. One feels foolishly discontent with oneself and everything. The election hangover was no exception. It was at this time that the first years came along, dispersing the gloom with their shiny faces and heavy purses. As usual the youngsters were given a torrid baptism by their worthy seniors in true Stanleyan fashion.

This year's first years brought a fresh problem in their wake—the problem of space to house them in the hostel. Year after year freshers pour into the hostel through the wide open gates. But there is little traffic at the exit. There was a proposal to shield the freshers from the sun and the rain by turning out the weather-beaten seniors into the wide world. There was a lot of stir about this but everything was smoothened out in the end

by distributing the congestion equally in all the blocks.

But the funniest part is that while the University authorities are panicking about the overcrowding in the hostel, the students themselves are not in the least bothered about it.

The Independence Day this year, was celebrated with much more enthusiasm than last year. The flag-hoisting ceremony attracted an unusually big patriotic crowd. And it is a fact that sweets and drinks were served this year.

The Graduates Reception was a big success. The Arts Secretary escaped without brickbats and that is saying a lot.

There was a surprising display of historionics. The English skit was a painful ordeal both for the actors and the audience. The heroine looking both capable and formidable went through her lines without flinching a muscle or batting an eyelid. The male actors made a few suggestions for the improvement of the love life of students. Suggestions made :—quarters for unmarried lovers; holes in the ladies hostel wall for the ladies to look at the matches played in the grounds; etc., etc !!

We are getting tired of these skits. Are we incapable of staging and appreciating subtle plays, humorous or otherwise ?

The musical items were, as usual, the main attractions. The least rehearsed items, a *qawali* and a *ghazal* deservedly drew the biggest applause.

They were rendered in true classical style by the artiste (Mr. Ahmed Khan for the ignorant), whose skill at classical music and impromptu songs is well-known.

Another musical item was hooted—rather unkindly, I thought—because some people identified the performance with the personality.

The Onam Day was the next in succession and it proved a success. The performances delighted a vast majority and displeased a few who happened to be on the wrong side of the jokes cracked in one of the skits. The main drama was one of the best staged in recent years.

The earlier the number of big occasions are cut down, the better it is for all concerned. The above mentioned are only some of the occasions that we in Stanely celeberate each year. And this year there was the Medical Exhibition. Some of the students and the staff members worked like field horses to make it a success it eventually proved to be. Day after day, long queues drew patterns across the lawns of the college. The volunteers shouted themselves hoarse with only throat pastules and pretty visitors to relieve their boredom. Little brats from elementary schools provided a nuisance value far exceeding their gate money. Old men were more inquisitive than teen-aged girls. The visitors were generally very discriminative, ignoring the departments which did not interest them and thronging those that they liked.

Everybody knows that in the last few years we were not very successful in the sports field. We were faring very poorly in most of the games and our teams had the bad habit of lurking in the bottom of the league tables. But this year it has been a different story altogether. Almost all of our teams put in remarkably good performances. Benjamin Franklin Pinto has inspired his Cricket team to big scores and bigger victories. The Football team was at the bottom only last year. But this year, showing improved technique, the footballers have found themselves among goals and victories with V. K. Jagadischandran at the helm. Skipper Jabbar's Volleyball team has been more than maintaining its last year's very good record. V. K. Sivaprakasam and Gopalakrishna Shetty were in fine form and have put the name of Stanley back on the Tennis map. I should also mention the Basketball team's excellent showing under the captaincy of P. Muthu. We can hope that next year, our teams will fare even better.

Rubaiyat Retold

(With apologies to Omar Khayyam.)

by

C. S. BALARAM,

Final Year.

Awake ! for it is well nigh ten
And to the college well-dressed hasten ;
Thine Beloved awaits thee with impatience
In the canteen, instead of visiting the patients.

Now the new year reviving old Desires
The thoughtful Soul from studies retires
Exams may come and exams may go
But life in the college for ever inspires.

Come, Fill the cup ! and in the Fire of spring
Thine winter garment of repentance fling
December has but a little way to come
But Lo ! Next April is on its wing.

Here with a pack of Char, beneath the Fan
A flask of coffee, an impish Balzac,
And thou beside me whispering in the college hall
OH ! the College hall is a paradise enow !

The university degree-men set their hearts upon
Turns Ashes—or it prospers ; and Anon,
Like Powder upon thy dusty face
Lighting an Hour or two—is gone.

Think—in what is our Alma Mater
Whose children increase year after year,
How student after student with his books,
Abode his decade or two, and left—none the wiser.

RUBAIYAT RETOLD—(*Contd.*)

Into this college, and why not knowing
Nor whence, Like T. B. insidiously invading,
And out of it, as cancer along the blood stream flowing,
I know not whither, far and wide reaching.

Ah ! Fill the cup, what boots it to fear
That Exams are drawing near
Unborn Decembeı and Dead April
Why Fret about them in sweet Today, Dear !

How long, in infinite Pursuit
Of incomprehensible medicine endeavour and dispute
Better be merry when we are together
Than sadden after the Bitter Fruit.

Leave the Mugs to their books, and with me
The diagnosis and the rest of it let me :
And in some cosy corner of this haven of peace
Make game of that which makes as much of thee.

It is all a Chequer-Board of Successes and failures
Where the examiners with us for Pieces play :
This and That question and sneer and jeer
And most of us back to the college return.

The Pitiless Examiner fails thee and having failed,
Fail on ; nor all thy Stanley spirit
Shall lure him to add half a mark,
Nor all thy tears get a pass out of him

Oh Thou ! who didst with Romance and Gin,
Beset the place I was to study in
Thou will not with Predestination bound,
Enmesh me, and impute my Failure to sin.

Ah ! Love ! could thou and I against the 'Varsity conspire
To grasp this horrid Exam system entire
Would we not shatter it to bits,
And get the MBBS without having to tire ?

And when Thyself with flying colours shall pass
Out of this college, into the wide world, my lass !
And in thy joyous Errand reach the spot
Where we once kissed, turn down an empty glass

—TAMAM SHUD—

Stanley Medical College Association

REPORT FOR THE YEAR—1955-'56.

M. MUTHUVEERAPPAN,

General Secretary.

Yet another useful and interesting year in the annals of our Association has passed with the unique example of co-operation and success that is characteristic of our Stanleyan spirit.

Inaugural Address:

The activity of our Association were inaugurated on 5th August 1955 by *Sri S. K. Chettur, I.C.S.*, Secretary to the Government of Madras Revenue Department. A fluent and gifted speaker, his talk was puncuated by humorous anecdotes. He appealed for quality and self sacrifice among doctors.

Farewell address to Dr. M. D. Ananthachari and Dr. T. S. Chelvakumar:

We do not wait for official inauguration usually to commence our multifarious activities On 26th July ' 55, we met to bid farewell to two of our most popular teachers, Dr. M. D. Ananthachari and Dr. T. S. Chelvakumar. Stanley usually suffers when other colleges require experienced members of the staff. Dr. M. D. Ananthachari, a remarkable clinician, a very great professor, a powerful orator, a scientist in the fullest sense of the term, at the same time a friend, philosopher and guide it is impossible to replace him. Dr. T. S. Chelvakumar, at the same time so popular and so respected will no doubt be a brilliant Professor at Madurai but what about poor Stanley? We always seem to supply the needs of others. A professor is trained after a decade of service and intimate contact with the students. Stanley of course is the training ground but just when they have become part of the life of Stanley and become indispensable they are replaced and that too not by their equals but men who are starting their teaching work. We hope that the authorities concerned will show a greater realisation of our difficulties.

Independence Day Celebrations: 15th August, 1955:

The National Flag was hoisted by our beloved Dean, Dr. K. N. Pisharoty. The N.C.C. Cadets (of the 6th Madras Medical Company) presented a guard of honour. A Symposium on 'The Foriegn Policy of India' followed. The Speakers included *Miss T. N. Anantanayaki, B.A., B.L.*, City Councillor, Corporation of Madras, *Mr. K. T. K. Thangamani M.A.*, Bar-at-law, Leader of the Indian Trade Union Congress and *Mr. V. Shanmugasundaram, B.A. (Hons.) (Econ.) M.A. (Politics)*, Professor of Economics, Thyagaraya College.

Goa Martyrs Day: 17th August, 1955.

The General Body of our Association passed a unanimous resolution condemning the artocious brutality of the Portugese Government and paying homage to the martyrs. We also requested the Government of India to take appropriate action in the matter.

Graduates Reception Day:

The biggest function of our Colege was celeberated on 19th August, 1955 with more than usual grandeur this time. The address to the Graduates was delivered by *Dr. A. Ramaswami Mudaliar, D.C.L. (Oxen)*, Vice Chancellor, Travancore University. The Chief Guest pleaded for a more realistic appreciation of the problem of rural medical service by the Government. He suggested that the Government should provide enough amenities and attractions in rural medical service so that it will not be a sacrifice but a pleasure to the doctors who take part in it.

On that day we had the biggest entertainment even seen within our memory, 'Just superb' was the universal comment. Thanks to our Arts Secretary and his associate. We retrived our leading place in Arts.

Noble Laureate's Visit: *Dr. Houssay*, a remarkable name in Medicine, perhaps the greatest living Physiologist visited our College on 21st January' 56. 'Hormonal Control of the Mammary Gland,' was the unique subject chosen by him and a masterly dissertation followed. A packed audience listened with deep interest.

World Famous Anatomist's Visit:

The whole college met on 17th February'56 to recieve the man who has been so intimately associated with the Pre-clinical life of every medico. *Dr. James Couper Brash* addressed the students on the 'History of Anatomy a.

Edinburg.' The Student President aptly remarked that Cunningham's Volume is the gospel of the pre-clinical medico and Dr. Brash advised us to include the cadaver in the little of gospel.

Child Welfare Specialist's Visit to Association :

Three specialists addressed our association on 9th March' 56.

Dr. Robinson, WHO Representative, South East Asia gave a lecture on 'The place of Pediatrics in the Medical Curriculum. '*Mr. Larson*' Administrator, UNICEF addressed the students on UNICEF and Maternity and Child Welfare in India. *Dr Mrs. Bhatia*, Adviser to the Government of India on Maternity and Child Welfare in India talked on 'Maternity and Child Welfare.

Farewell to our Outgoing Dean and Welcome to our New Dean :

On 14th March we met to bid farewell to our beloved Dean, *Dr. K. N. Pisharoty*. Dr. A. A. Ayer and Mr. K. S. Madhavan spoke on the occasion. His name shall always be associated with a momentous period in the history of our college and his personality shall be remembered for a long time to come in Stanley.

Our new Dean Dr. R. G. Krishnan assured us he would be a kind father to all of us. He is enthusiastically welcomed by the students who offer him their whole-hearted co-operation.

Cultural Functions :

Bharathi Day was celebrated on 16th September' 55. The Hon'ble Minister for Religious Endowments and Transports *Sri B. Parameswaran* and the Director of Public Instruction *Sri N. D. Sundaravadivelu* were the guests of honour.

Onam day was celebrated with grand party and entertainment on 4th September' 55.

Pongal day was unique as usual on 1tt Jan, 56. *Sri M. K. Shanmugam*, Principal Theagoraya College,*Sri P. T. Rajan M. A*,, Bar-at-law, M.L.A. *Sri Anbu Ganapathi* and *Sri M. Varadarajan, M.O.L., Ph.D.*, of Pachaiappas College addressed the students on the occasion.

Due to tne decreasing number of Andhra students in our college it was not possible to celebrate the 'Andhra Day' in our usual fasion. Our students joined the students of Madras Medical College in commemorating the occasion suitably.

Branches of the Association :

Clinical Society :

The Clinical Society was revived after a long sleep for years. It has done very good work this year.

Social Service League :

The Social Service League completed its sixth successfull year with its weekly attendance of more than 800 patients and more than 6000 patients during the annual camp. A medical relief wing was started and is awaiting fuller work pending recognition by the Government. The First Anniversary of our Second Medical Relief Unit was presided over by the Hon'ble Shri *M. Bakthavatsalam* Minister for Agriculture, who declared open our Antenatal and leprosy clinics. The camp was visited by the Hon'ble Shri *A. B. Shetty* and Shri *C. Subramaniam*. The Director of Medical Services also was an interested visitor. Shri *K. Kamaraja Nadar*, Chief Minister visited Alamadi on 25th March '56 and appreciated our work very much.

Canteen :

The Stanley Medical College Students' Canteen in spite of its very able Secretary could not be maintained on a profitable basis.

The Committee decided to give a contract for the canteen and thus augment the Association's finances considerably.

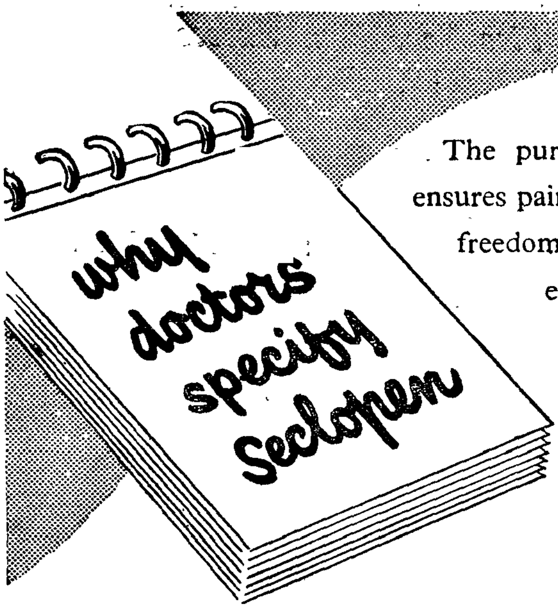
The Sports Section was very active as usual and completed another successful year.

The Journal brought out a very attractive first issue in November 1955 and second issue in March 1956. We hope that our future Editors will meet with less financial difficulties than this year and that the incoming committee will be able to meet the present financial crisis.

Conclusion :

There have been many fields where we could have had greater measure of particication and success. We hope that the future secretaries will be able to achieve what we had not been fortunate enough to win.

I would like to mention my sense of deep gratitude to all the students who have co-operated with me in the various functions of the year. I also thank all the members of the staff who have always helped and guided me in proper channels. I request all the members of the Association on extend their maximum co-operation to my successor and make this Exhibition Year a grand success.



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